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THE CANADIAN AGRICULTURIST,

11

AND

Journal and Transactions

OF

THE BOARD OF AGRICULTURE

OF

UPPER CANADA.

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PUBLISHED SEMI-MONTHLY,

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, JANUARY 1, 1861. No. 1.

Our New Volume.

The commencement of a new year affords the conductors of this Journal an opportunity of saying a few seasonable words in reference to both past and future.

In the first place we wish to return thanks to our subscribers and contributors; to the former we have received large accessions, while the latter have not increased in so great a ratio as we could desire. To such however, as have favoured us with communications,—and several of great value are to be found in the volume just concluded,—our warmest acknowledgements are due.

The great object of this serial is to diffuse a knowledge of the science and practice of agriculture as widely as possible, and to convey information on subjects of a cognate nature.—While the claims of horticulture and domestic economy are not lost sight of, it is intended that matters pertaining to the cultivation of crops, the breeding and fattening of animals, and in short whatever legitimately belongs to rural economy and farm management shall continue to form the principal features of the work.

It is our most earnest wish that *The Canadian Agriculturist*, should cultivate a field commensurate with its name. Accordingly we invite contributions from all sections of Western Canada, from the remote settlements of the country, where the first efforts of the husbandman are necessarily directed to the clearing of the primeval forest, as well as from the older frontier counties, where the practical routine of agriculture has assumed a more regular and definite form. As heretofore, the proceedings and transactions of the Board of Agriculture, with a condensed summary of the Reports of all Agricultural Societies in this section of the Province, receiving Government aid, will continue to occupy a portion of these pages; and as the organization of societies improves, and their efficiency becomes consequently increased, this part of the Journal will assume a higher and more useful character. And to this point we wish to call the special attention of the Directors of our Agricultural Societies, who have the means of embodying in the reports which they send annually to the Board, much valuable information, both of a local and general character.

The Journal being published *fortnightly*, affords much better facilities than formerly, for communicating recent information on all subjects in which farmers are professionally interested; and as a means of official communication between the Board and Agricultural Societies, throughout this western section of the Province. There is reason to believe that these advantages will be more apparent and appreciated, year by year.

As this work is not intended to be made a means of pecuniary profit to the Board, or to its conductors, no space is devoted to ordinary trade advertisements, which usually occupy several pages of similar publications, and we are thereby

enabled to give a much larger amount of reading matter. We shall always be ready however to give publicity in our columns to all matters, such as the importation or sale of seeds, cattle, &c., in which the majority of our readers have an interest. And in giving agricultural news, local or general, as well as in presenting our readers with original and systematic papers on various points of interest in practical and scientific agriculture, we trust that the volume we are now commencing will be superior to its predecessors.

In conclusion we again earnestly invite those who desire to see this Journal maintained and improved, not only to use their influence in procuring subscribers, *but more especially to send us information for its pages.* In this way only can variety be secured; and the filling up of 768 pages a year, ought not to be left almost entirely to the conductors, who have many other pressing duties devolving on them. Long and laborious articles are neither requested, nor as a general thing wanted. We ask our farmers, to forward information founded on their own observation and experience; give us facts, however laconically expressed, and we will undertake to work them into shape. A communication or two yearly from some member of each society, would afford us as much as we either ask or desire.—Will not some of our young and enterprising readers try it?

The Census.

The Census of the Province will be taken on the 14th day of the present month. It is of great importance, on many accounts, that this should be done correctly, and ample instructions have been issued by Mr. Hutton, the efficient Secretary of the Statistical Department, for the guidance of the Commissioners and Enumerators. Agriculturists and all other classes of the community should understand that there are constantly questions arising affecting the public interests of the country, in the elucidation of which the census is of the highest importance, but if not correctly taken, its value is more or less destroyed. It is also of consequence to the personal interests of each individual possessing property or status in the country, that the information sought should be obtained. We copy the following portion of Mr. Hutton's instructions to the Enumerators relating to the Agricultural Census:—

"In taking the *Agricultural* Census which is to contain only the names of heads of families occupying lands, whether male or female, you will take care that opposite each person's name (in column 4) the total number of Acres occupied within the limits of your Enumeration District, by him or her, is legibly set down in good figures, and that columns 5, 6, 7, 8 and 9, when added, correspond with column 4.

"In column 50 it has been thought desirable to designate the value of Working Horses separate from other animals, as they are an important element in the agricultural policy of the country.

"Column 54 should include the Value of all the live stock mentioned in columns from 46 to 53 inclusive. They form a very important item in the wealth of the country, and will be a criterion of the Comparative state of Agriculture in each Township and County, and also in Canada as compared with other countries.

"In columns 62 and 63, you will set down the Number and Value of pleasure Carriages, and pleasure Sleighs, Cutters, &c., kept by each person. Where two or three are kept by the same person, the value of all may be set down in one sum in Dollars.

"Column 68 is left for any Remarks you may think right to make, as to cause of Deficiency in any particular Crops, &c., &c., &c.

You will endeavour to impress upon the people in your Enumeration District, that the information here sought has no reference whatever to taxation, and that accuracy in their returns is of the highest importance, in order to ascertain the state of the resources of the country and encourage the introduction and investment of Capi tai in the Colony, where the Statistics, truthfully taken, warrant the investment.

Agricultural Progress in Australia.

A Statistical Congress has been held in London to enquire into the agricultural condition of the Colonies. At present the official reports are in possession of the Board of Trade, but will, we hope, soon be published. The following matter is taken from a report in the *Farmer's Magazine.* The gold production of the Australian colonies since 1851 has exceeded in value the enormous sum of £101,000,000; and the effect of this gold yield, and of the immigration it has induced, has been considerable, especially in Victoria. In this district the wages of skilled labour prior to the gold mining were 6s. and 8s. a-day; during two years they rapidly advanced, and for

a short time stone-masons and other mechanics were receiving wages as high as 40s. a-day. After a rapid fall there has been, until lately, some degree of steadiness at about one-third of these high rates. All articles bore enormous prices. When flour was £25 a ton at Melbourne, it was £200 a ton at the great gold field of Bendigo—100 miles inland—with a population of about 50,000. But now these difficulties are in the past. Bendigo has now a large incorporate town, Sandhurst, possessing excellent institutions. The area of land under crop has been rapidly extending, especially in the younger colonies. The crops include artificial hay. The extent under crop for 1858, was in

	Acres.
New South Wales	217,443
Victoria (taken March, 1859)	278,960
South Australia	264,462
Tasmania	229,489
New Zealand	140,965
Total	1,151,319

The cultivation of the vine is considerable; the number of acres for 1858 being, in New South Wales, 1,180; in South Australia, 1,626; and in Victoria, 547. The cultivation of maize is now, likewise, very large.

An interesting fact is the large proportion of wheat land, as compared with that of other countries. For South Australia the wheat acreage is 71 per cent. of the whole area of land under crop; while in Ireland it is 11 per cent., and in Scotland only 6 per cent. The yield of wheat is remarkably small; as, for instance, 18 bushels per acre in 1858 in South Australia, and in 1859 only 12 bushels per acre. New South Wales ranges between these quantities. Victoria illustrates the importance of genial seasons. The following yield per acre of wheat for four years, shows a gradual annual diminution, caused by diminished or less seasonable supplies of rain :—

Years	1856.	1857.	1858.	1859.
Bushels per acre	26.9	23.2	20.7	19.9

A striking peculiarity of Australia is the large area of its naturally grassed country. Most of the waste lands, are, in their unimproved state, available for pasturage. The quantity of wool exported annually to the United Kingdom and other places, amounts to nearly sixty millions of pounds weight.

	Lbs.
In the year 1807, New South Wales exported to the United Kingdom.	245
In 1820	99,415
In 1835, New South Wales and Tasmania to all countries	5,500,000
In 1845, Australian colonies to United Kingdom only	24,177,315
In 1855, do.	49,142,306
In 1859, do.	53,700,542

Principles of Cross Breeding.

[The following remarks are from an able article in a recent number of the *Journal of the Royal Agricultural Society of England*, from the pen of W. C. Spooner, Esq., the eminent Veterinary Surgeon.—Eds.]

The maxim "*like begets like*" is a rule having very extensive sway, yet, as propagation is the work of two parents, the respective influence of one or the other is a matter involving considerable diversity of opinion, and prevents anything like a certain conclusion being arrived at. We can not do better than consider, on the very threshold of our subject, the respective influence of either parent; for on this the merits of pure or cross breeding must principally depend. The most probable supposition is, that propagation is done by halves, each parent giving to the offspring the shape of one half the body. Thus the back, loins, hind-quarters, general shape, skin, and size, follow one parent; and the fore-quarters, head, vital and nervous system, the other: and we may go so far as to add, that the former in the great majority of cases go with the male parent, and the latter with the female. A corroberation of this fact is found in the common system of putting an ordinary mare to a thoroughbred horse; not only does the head of the offspring resemble the dam, but the forelegs likewise, and thus it is fortunately the case that the too frequently faulty and tottering legs of the sire are not produced in the foal, whilst the full thighs and hind quarters which belong to the blood horse are generally given to the offspring. There is, however, a minority of cases in which the opposite result obtains. That size is governed more by the male parent, there is no great difficulty in showing;—familiar examples may be found in the offspring of the pony-mare and the full-sized horse, which considerably exceed the dam in size. Again, in the first cross between the small indigenous ewe and the large ram of another improved breed—the offspring is found to approach in size and shape very much to the ram. The mule offspring of the

mare also very much resembles both in size and appearance its donkey sire. These are familiar examples of the preponderating influence of the male parent, so far as the external form is considered. We are of the opinion that, in the majority of instances, the size and *contour* in animals is influenced *much more by the male* than the female parent; and, on the other hand, that the constitution, the chest, the vital organs, and the forehand generally, more frequently follow the female.

Pure Breeding, which, when carried to excess, is called in-and-in breeding, has its advantages as well as disadvantages. Its friends observe with great force that when we have in breeding reached great excellence, it is folly to risk the loss of such excellence by means of crossing; and the more so as the defects of a parent may disappear in the first and second, and reappear in the third and fourth generation; "*breeding back*," as it is commonly termed.

Again, it is urged that great excellencies can only be perpetrated by union with similar excellencies, and beyond all this that there is a certain amount of advantage from an unstained lineage—from the very possession of breed, as it is designated. The objectors to *in-and-in* breeding urge, that by so doing we engender weakness of constitution, diminution of size, hereditary disease, and also a tendency to barrenness; but it is urged in reply to such objections, that they occur from want of sufficient care in weeding out defective animals, whether as respects constitution or size.

Examples of pure breeding are familiar to us in the admired race-horse, the first-class shorthorn, and the South-down sheep; but, so far as purity of breed alone is considered, the mountain sheep of Wales, the Highland Scotch cattle, and the Shetland or Welch, are equally pure; but whilst the latter have been propagated without care or attention, the former have, by careful selection and rigorous weeding, been considerably enhanced in value. A striking example of long continued pure breeding is afforded by the Leicester flock of Mr. Valentine Barford, of Foscote, near Towcester, who has the pedigree of his sheep from the day of Bakewell in 1783 to the present time, and since 1810 he has bred entirely from his own flock, sire and dam, without an interchange of male or female from any other flock. He observes, "that his flock being bred from the nearest affinities—commonly called in-and-in breeding—has not experienced any of the ill effects ascribed to the practice." His flock is remarkably healthy, and his rams successful, but his sheep are small.

Examples of pure breeding are probably to be found in greater perfection in cattle than in sheep. The Devon and Hereford cattle have descended through many generations in unbroken lines, and owe the perfection they have attained to careful selection. The Short-horns, although considerably more modern in their origin, and moulded into their present form by a series of successful crosses, have yet been preserved pure with even more rigorous care than the other breeds which we have mentioned. The solid frame and feeding properties of the Herefords —the quality of beef and richness of cream, as well as working properties of the Devons, are well known and generally appreciated; and yet these qualities are insufficient to resist successfully the encroachments of the Short-horns, whose early maturity and disposition to lay on both flesh and fat, joined with fair milking properties, are such that they outnumber both the other breeds combined.

History fails to supply us with the origin of our various breeds of sheep; but we doubt not that, for many centuries after the time of the Romans in this country, certain distinct breeds were perpetuated, with little improvement and little change. The progenitors of the present Southdown or Sussex breed, inferior as they were to their descendants, ranged probably, in the days of the Romans, over the Southdown hill; whilst another breed, happily extinct, occupied for the most part the hills and downs of Wiltshire and Hampshire. A large bony, narrow, but active sheep, with large head, Roman noses, and long curly horns, high in the withers and sharp in the spine, but yet the largest short-wooled sheep in existence, were the denizens of these counties during the last century.

In Wiltshire, although they remained as a pure breed much longer than in Hampshire, yet, as far as can be learnt, they were supplanted by the Southdown, whose superior qualities displaced the old Wiltshre altogether; and we are not aware of any instances in which they were crossed, except for the purpose of crossing them out by using again and again the Sussex ram. Mr. James Rawlance of Bulbridge, near Wilton, whose large practical experience, both as sheep-breeder and land-agent stamps his authority with considerable weight, observes in reply to the author's enquiry: "The last flock of this breed (old Wiltshire) disappeared about the year 1819, and the substitution of the Southdown commenced late in the last century. In many cases Southdown ewes as well as rams were brought out of Sussex to replace the horned flock, but in numerous instances the two breeds of sheep were crossed, and by the continued use of the Southdown ram the chief characteristics of the horned breed were merged in the Downs. The cause of the very rapid substitution of the Down for the Wiltshire may be found in the fact of the large number of enclosures of common fields which then took place. The sturdy horned wether was thoroughly competent to take care of himself when the system of feeding in common prevailed, but when each farmer could keep his flock separate, an animal of superior quality was preferred.

In Hampshire on the other hand, where the same sheep prevailed and were valued for their hardihood, and their powers of travelling far,

and folding hard, properties so valuable when the fertility of the light soils was mainly kept up by these useful manure carriers, these sheep were extensively crossed. Previous to the close of the last century, the Southdown sheep had been greatly improved by careful selection, and the name of the late Mr. Ellman was well known for his eminent services in bringing out and improving the latent qualities of this valuable breed. About the beginning of the present century the sheep-breeders of North Hampshire began to bestir themselves, and a few enterprising farmers procured some rams from Sussex, of the Southdown breed. Finding the experiment successful, it was repeated again and again, care being taken to select the largest, coarsest, and *blackest*-faced rams, which it was thought would suit the coarse sheep with which they had to amalgamate. How many crosses with the pure Sussex were used we cannot ascertain, but enough materially to alter the character of the breed, to cause the horns to disappear, and to change the color of the face from white to black; and, with these changes, to impart a more compact frame, a broader back, rounder barrel, shorter legs, and superior quality altogether, and yet preserving the hardiness and the disposition to make early growth, which the original flock possessed.

The Hampshire sheep may, therefore, be instanced as an example of successful crossing, and as a proof of what can be done by the male parent in changing, in a very few generations, the character of the original, and yet retaining some of its good qualities, thus forming a breed more intrinsically valuable than either source from which it is derived. It was found by Mr. Lawes, in his careful and valuable experiments, that the Hampshire sheep, although they were surpassed by the Cotswold, yet exceeded the Southdown in the amount of mutton raised from a given weight of food.

Some thirty years since a Hampshire farmer still living (Mr. John Twynam,) used the improved Cotswold ram with his Hampshire ewes, and the first cross exhibited the preponderating effect of the male. The produce, in size, general appearance, and wool, partook far more of the ram than of the ewe, and it was thought that a most valuable breed had been obtained, which, with the increased size, and weight of fleece, and disposition to flatten of the Cotswold, would combine the hardiness and folding capabilities of the Hampshire. It was found, however, no easy task to perpetuate such a breed after the first cross—the defects of the one parent or the other, would appear and reappear, in the second and third generation, and it was only by careful weeding that anything like uniformity could be attained.

Various attempts were made some years since to introduce the merino blood, with the idea that great benefit would be derived from the increased quantity and the superior fineness of the wool; and undoubtedly, if the carcase of the Southdown and the wool of the merino, could be united in the same animal, the acme of sheep-breeding would be attained. It was found, however, that the quantity of the wool was not a sufficient recompense for the want of early maturity and feeding properties; and at length the Merinos disappeared, by the continued use of other rams. It is very possible, however, that they may have left behind them some improvement of the fleece, for it is equally difficult in breeding to get rid of a virtue or wash out a stain.

There are few districts in England in which some advantage has not been derived from the cross-breeding of sheep. Even the little mountain sheep of Wales, has been greatly improved by the Cheviot ram, a larger, superior, but still a mountain sheep. At the same time the Cheviots themselves have been improved for the butcher by crosses with the Leicester, the Cotswold, and the Down. The progeny have been increased in size, and fattened more readily. This breed has also been considerably improved by selection.

The testimony in favor of the advantages to be derived from the cross-breeding of sheep, when the purpose sought for is limited to the first cross is so strong that, however forcible may be the arguments of the advocates of pure breeding with reference to stock sheep, they sink altogether in weight, when sheep for the butcher are concerned.

We think, therefore, we are justified in coming to the following conclusions:

1st. That there is a direct pecuniary advantage in judicious cross breeding; that increased size, a disposition to fatten, and early maturity are thereby induced.

2nd. That whilst this may be caused for the most part by the very fact of crossing, yet it is principally due to the superior influence of the male over the size and external appearance of the offspring; so that it is desirable, for the purposes of the butcher, that the male should be of a larger frame than the female, and should excel in those peculiarities we are desirous of producing.

3rd. Although in the crossing of sheep for the purpose of the butcher, it is generally advisable to use males of a larger breed, provided they possess a disposition to fatten, yet in such cases it is of importance that the *pelvis* of the female should be wide and capacious, so that no injury should arise in lambing, in consequence of the increased size of the heads of the lambs. The shape of the ram's head should be studied for the same reason. In crossing, however, for the purpose of establishing a new breed, the size of the male must give way to other more important considerations; although it will still be desirable to use a large female of the breed which

we seek to improve. Thus the Southdowns have vastly improved the larger Hampshires, and the Leicesters the huge Lincolns, and the Cotswold.

4th. Although the benefits are most evident in the first cross, after which, from pairing the cross-bred animals, the defects of one breed or the other, or the incongruities of both, are perpetually breaking out, unless the characteristics and conformation of the two breeds are altogether averse to each other, nature opposes no barrier to their successful admixture; so that, in the course of time, by the aid of selection and careful weeding, it is practicable to establish a new breed altogether. This, in fact, has been the history of our principal breeds.

The Leicester was notoriously a cross of various breeds in the first instance, although the sources which supplied the cross is a secret buried in the "tomb of the Capulets." The Cotswold has been crossed and improved by the Leicester; the Lincoln, and indeed all the long-wooled breeds, have been similarly treated. Most of the mountain breeds have received a dash of better blood, and the short wooled sheep have been also generally so served. The Hampshire and the present Wiltshire Downs, have been extensively crossed; the friends of the Shropshire, cannot deny the "soft impeachment;" and the old black-faced Norfolks have been pretty well crossed out altogether. The Southdown is perhaps one of the purest breeds we have. No one asserts that the immense improvement of this breed by Ellman was due to any crossing.

Hints on Shingling.

A correspondent of the *New England Farmer* recommends the soaking of shingles in a thin white wash made with brine instead of water. However wide the shingles he never allows the nails to be more than two inches apart; for the following reason: If shingles are wet or green, and the wide ones are nailed at the edges, the shingle will split, or one of the nails must draw when the shingle shrinks. If the shingle is dry, it will crowd the nail out, when it swells. The nails should not be driven quite in, so as to sink the head; for the heads of the nails hold up the but of the next row of shingles, and allow the air a free circulation. He lays all his shingles in white-wash prepared with brine; lines with red chalk; whitewashes the last course laid down to the line, and when completed whitewashes the whole of the roof. In this way it is contended that shingles will last twice as long as in the ordinary way.

In Canada shingles are sometimes laid in mortar, thereby rendering the roof warmer and less liable to burn in case of fire. It is also said that the mortar tends to preserve the shingles. We should be glad to hear from such of our readers as have had experience in these matters, which are of importance to farmers, as well as other portions of the community.

Root Culture.

Editor Agriculturist,—Great benefit has flowed from the excitement of competition in the growth of prize crops of roots during the last few years in the townships of Etobicoke and York, by means of private matches among the members of some of the Agricultural Societies. Before these matches were commenced few farmers would admit that it was possible to produce any large crop of field turnips in this country, on account of the seasons being too dry and the fly irresistible. These ideas have been scattered to the winds by the results obtained by the competitors in the growth both of turnips and carrots, crops of which have been raised, varying from twenty to thirty tons (old measurement) per acre, which, I believe, fully equals the average of similar prize crops in the old countries; and there the average of ordinary field crops is from eight to ten tons per acre.

Viewing then, the success which has attended these individual exertions it is much to be regretted that a similar system is not applied in the distribution of the large amounts of money devoted to premiums both by our Provincial and local societies. Although doubtless the quality of any crop is of immense importance, yet the quantity is not of less consequence, and the excellence of a small sample exhibited is no criterion of the success which has attended the cultivation of a whole crop. A couple of dozen of roots may be grown and a few bushels of grain prepared, and gain a prize without the exhibitor being either a general, practical or successful cultivator. Would it not then be of great advantage to devise some means by which these premiums might be given for crops to be examined on the land instead of for specimens to be exhibited in the tent. Still greater benefit would accrue from reports of judges being made up containing statements of the method, actual expense, and therefore profit or loss of cultivation. Below will be found an account of the cultivation of four-fifths of an acre of white Belgian carrots, grown during the past season. The land had borne a crop of oats during 1859, and underdrains with tiles had been put in at a depth of four feet, and thirty-three feet apart, in the spring of 1860, the other part of the field having been similarly drained during the previous months of December, January and February.

The first charge, at $10 per acre, made against the crop for rent of the land, may appear exorbitant to many readers, but any clay land which is worth $5 per acre without draining is certainly worth double that amount after being drained.

This account is not given as an example, by any means, of perfectly economical or thorough cultivation, for being otherwise engaged, my root crop was of small breadth, and did not receive that careful attention which would no doubt have produced a larger crop at smaller expense, many items in the actual cost having been capable of a large reduction under more systematic treatment.

Dr.

Four-fifths of an acre, at $10 per acre per annum	$8 00
Three ploughings, with scarifying, harrowing, rolling, &c	8 00
Ten cart loads of rich farm-yard manure, at $1	10 00
Man, horse and cart, one day	1 50
2 lbs. of seed, and sowing with hand seed drill	2 00
Boys thinning and hoeing by hand	5 75
Boy and horse hoeing twice, less than ½ day each time	1 25
Digging, topping, and filling into barrels, 830 bushels at 75 cents per 100	6 25
Four days carrying and storing in cellar	8 00
	$50 75
Balance	32 25

Cr.

368 barrels of 2¼ bushels each, 830 bush. at 40 cents	$83 00

Giving a balance of over $50 per acre for rent and profit, the crop having cost in all $6.12 per 100 bushels, a little over $2 per ton, and the yield having been at the rate of 1037 bushels, or 31 tons (short measure) per acre. The total cost of draining this field as above stated, did not quite amount to $27 per acre, which it is evident, is amply repaid by this crop in one season, and this can be done with every acre of clay land in Canada.

This carrot ground being but a small piece of land, and sown on the level instead of on ridges, horse labour was little used in the after cultivation, and this, of course, occasioned a greater expense and smaller yield. Ridging land is an indispensable preparation for the sowing of these root seeds, for the young plants being so exceedingly small and delicate a very little covering of earth will destroy them, and when they are sown on the level ground it is impossible to hoe them early by any horse machine, without throwing earth upon them, whereas if sown on ridges the horse hoe can be used among them as soon as seen above ground, the earth disturbed by the machine falling between the rows instead of over the plants. This horse hoeing beside being cheaper is also far more efficient than hand labour; for to grow roots successfully the land should not only be kept perfectly clean, but be also *deeply* and frequently stirred.

I cannot conclude this letter without calling attention to the excellence of a horse hoe which I imported from Northamptonshire in 1861, made by Wm. Smith of Kettering. From the peculiarity of its construction it can be guided among rows of plants, no matter how crooked they may be, and if only parallel more than one at a time. I have hoed with this implement five rows of turnips, in passing once across and back, sown sixteen inches apart with Atkinson's large grain drill. Any other crop even of grain can be hoed with it if drilled; and on light land it makes an excellent scarifier or cultivator for a bare fallow, with only one horse, covering four feet of ground each time.

Yours, &c.,

HUMBERFORD.

West York, December, 1860.

Agriculture in China.

Every substance derived from plants and animals is carefully collected by the Chinese, and converted into manure. Oil cakes, horn and bones are highly valued; and so is soot, and more especially ashes. To give some notions of the value set by them on human offal, it will be sufficient to mention that the barbers most carefully collect and sell, as an article of trade, the somewhat considerable amount of hair of the beards and heads of the hundreds of millions of customers, whom they daily shave. The Chinese know the action of gypsum and lime; and it often happens that they renew the plastering of the kitchens, for the purpose of making use of the old matter for manure.

No Chinese farmer ever sows a seed of corn before it has been soaked in liquid manure diluted with water, and has begun to germinate; and experience has taught him, (so he asserts,) that this operation not only tends to promote the growth and development of the plant, but also to protect the seed from the insects hidden in the ground.

During the summer months, all kinds of vegetable refuse are mixed with turf, straw, grass, peat, weeds and earth, collected into heaps, and when quite dry, set on fire; after several days of slow combustion the entire mass is converted into a kind of black earth. This compost is only employed for the manuring of seeds. When seed time arrives, one man makes holes in the ground; another follows with the seed, which he places in the holes; and the third adds the black earth. The young seed, planted in this manner, grows with such extraordinary vigor that it is thereby

enabled to push its rootlets through the hard, solid soil, and to collect its mineral constituents.

The Chinese farmer sows his wheat, after the grains have been soaked in liquid manure, quite close, in seed beds, and afterwards transplants it. Occasionally, also, the soaked grains are immediately sown in the field properly prepared for their reception, at au interval of four inches from each other. The time of transplanting is towards the month of December. In March the seed sends up from seven to nine stalks with ears, but the straw is shorter than with us. I have been told that wheat yields 120 fold more, which amply repays the care and labor bestowed upon it.

It is quite true that what suits one people may not on that account suit all countries and all nations; but one great and incontrovertible truth may, at all events, be learned from Chinese agriculture, viz., that the fields of the Chinese cultivator have preserved their fertility unimpaired and in continued vigor ever since the days of Abraham, and of the building of the first pyramid in Egypt.* This result, we also learn, has been attained solely and simply by the restitution to the soil of the mineral constituents removed in the produce; or what amounts to the same thing, that this has been effected by the aid of a manure, of which the greater portion is lost to the land in the system of European (and American?) cultivation.—*Liebig's Modern Agriculture.*

To obtain Weight of Live Cattle.

Experienced drovers and butchers are in the habit of buying cattle, estimating their weight on foot. From long observation and practice they are enabled to come very nearly to the actual weight of an animal; but many of them would be apt to err, if at all, on the right side; while the less experienced farmer always stands the greatest chance to get the worst of the bargain. To such we would recommend the following rule to ascertain the weight of cattle, which is said to approach very nearly the truth in most cases. The proof of this to the satisfaction of any farmer, is easily determined at most of the annual fairs where scales are erected, and at numerous other points in the country.

Rule—Take a string, put it around the breast, stand square just behind the shoulder blade, measure on a rule the feet and inches the animal is in circumference; this is called the girth; then with the string measure from bone of tail, which plumbs the line with hinder part of the buttock; direct the line along the back to the forepart of of the shoulder blade; take the dimensions on the foot rule as before which is the length, and work the figures in the following manner: girth of the animal, say six feet four inches, length five feet three inches, which, multiplied together makes thirty-one square superficial feet, and that multiplied by 23 (the number of pounds allowed to each superficial foot of cattle, measuriug less than seven and more than five feet in girth,) makes seven hundred and thirteen pounds. When the animal measures less than nine and more than seven feet in girth, thirty-one is the number of pounds to each superficial foot.

Again suppose a pig or any small beast should measure two feet in girth and two along the back—multiplied together make four square feet, that multiplied by eleven, the number of pounds allowed to each square foot of cattle measuring less than three feet in girth, makes forty-four pounds. Again, suppose a calf, a sheep, &c., should measure four feet six inches in girth, and three feet nine inches in length, which multiplied together, makes fifteen and a quarter square feet, that multiplied by sixteen, the number of pounds allowed to cattle measuring less than five and more tuan three feet in girth, makes two hundred and forty-four pounds. The dimensions of girth and length of horned cattle, sheep, calves, and hogs may be exactly taken in this way, as it is all that is necessary for any computation or any valuation of stock, and will answer exactly to the four quarters, sinking offal. The rule is so simple that any man with a bit of chalk can work it out. Much is often lost to farmers by mere guess work of the weight of stock, and this plain rule is well worth their attention.—*Valley Farmer.*

Ayrshire Cattle.

This breed are so remarkable for yielding an abundant supply of milk, and are so well suited for the dairy, that they are worthy of notice. We have seen them in their native pastures on the banks of the Clyde, in Scotland, also in various ports of Europe and America, and in every place we have found them sustaining their high character as milkers.

The origin of this breed has not been clearly ascertained, but it is very probable that they have sprung from the native stock of the country, and that their excellence has been obtained by good management in selecting and crossing the breeding animals.

The Ayrshire cow is not large, but her shape and figure denote that she is made for milk. It is a well-known fact that cows which have a tendency to become fat, are seldom remarkable for yielding much milk, and are very apt to go dry early in the season. The Ayrshires are good milkers, but they do not fatten readily, and on this account are objected to by many breeders. The Devons and the Durhams have a much

* Vessels of Chinese porcelain are found in the pyramids, of the same shape, and with the same characters of writing on them, as on modern China at the present day.

greater tendency to fatten than the Ayreshires. The color of this breed is generally a yellowish red, mottled and spotted with white; the cows are remarkably quiet and docile, and when a large herd of them are feeding together in the rich green pastures of their native country, their appearance affords as pretty a rural sight as can be imagined.

The Ayrshires belong to the middle-horns, they have for a considerable time been considered as the best milkers of all breeds, but latterly they have been generally superseded by the Durhams, on account of the latter combining several desirable qualities. The beef of the Ayrshires, although of good quality, and possessing a good intermixture of fat and lean, makes a poor return to the butcher, and is not in much request. It is said that an Ayrshire cow of small size will consume as much food as a much larger animal of the Devon or Durham breed.

Mr. Aiton, in his "Treatise on the Dairy Breed of Cows," thus describes the Ayrshires: "The shapes most approved of are as follows: The head small and rather long and narrow at the muzzle; the eye small, but smart and lively; the horns small, clear and crooked, and their roots a considerable distance from each other; neck long and slender, tapering towards the head, with no loose skin below; hind quarters large; back straight, broad behind joints, rather loose and open; carcass deep, pelvis capacious and wide over the hips, with round fleshy buttocks; tail long and small; legs small and short, with firm joints; udder capacious, broad and square, stretching forward and neither fleshy; low hung or loose; the milk veins large and prominent; teats short, all pointed outward, and at considerable distance from each other. The head, bones, horns and all parts of least value small, and the general figure compact and well proportioned.

The cattle from which the Ayrshires sprung are said to have been bred on Lord Marchmont's estates in Berwickshire, and at Lornberg in Kyle. They soon attracted the notice of breeders, and their progeny were eagerly sought after. It was not until 1780 that the improved breed was properly estimated and established in Ayrshire.

The quantity of milk yielded by an Ayrshire cow is very large for her size. Five gallons daily for two or three months after calving may be considered a fair average; she may be expected to yield three gallons daily for the next three months, and one gallon and a half during the succeeding four months.

The quality of milk is best known by the quantity of butter or cheese that it will produce. Three and a half gallons of the milk of an Ayrshire will generally produce one pound and a half of butter, and twenty gallons, with the cream, will yield twenty-four pounds of sweet milk cheese.

The advocates of the Ayrshires say that they will fatten as well as cattle of any other breed, and on this account strenuously recommend them to notice, but a little experience will show the fallacy of this representation, and prove that while they excel for the dairy, they are not very profitable for the grazier or butcher. A cross between the Durham and the Ayrshire produces excellent stock.—*Detroit Tribune.*

Observations on the Physical Geology of the Western Districts of Canada.

BY CHARLES ROBB, C. E., HAMILTON, C. W.

From The Journal of the Canadian Institute.

The investigation and illustration of the geological structure of the surrounding country, whether we regard it simply as a matter of scientific interest or of practical utility, must ever form one of the most prominent objects of such Associations as that of which this *Journal* is the organ. To those whose previous studies have given them a taste for, and aptitude in, such pursuits, no subject can possess greater interest, or add greater zest to the enjoyment of their excursions, whether of business or pleasure; while even to those whose acquaintance with geological science may be but superficial, the knowledge of those causes which have operated in determining the configuration of our coasts, and in producing the most prominent features of the scenery by which we are surrounded, must be a source of pure and elevating enjoyment. Again, as a striking instance of the benefit of such investigations in a utilitarian sense, I need only advert to the fact that both in Canada and in the neighbouring State of New York, before the deductions of geological science were brought to bear upon the public mind, large sums of money were squandered in abortive attempts to find coal in rocks below the carboniferous series. In exposing the absurdity of such attempts, and thereby rendering the resources thus wasted available in more profitable channels, the science of geology has conferred on this Province a service which will amply justify the expenditure of the sums granted by Government for the prosecution of these researches.

Sir Roderick Murchison computes that the money expended in England alone, before geology was understood, in searching for coal where it would now be considered madness to expect it, would be sufficient to effect a correct general geological examination of the entire crust of the globe.

I propose, in this and subsequent papers, to lay before the readers of the *Canadian Journal* the results of such investigations into the physical geography of the western districts of Canada as I have had it in my power to make during a residence of upwards of eight years in those parts

of the Province. The region embraced in these explorations is that lying between the Niagara and St. Clair Rivers, and the object in view in undertaking and prosecuting them was chiefly the gratification of my own tastes, for which, however, professional engagements have afforded both opportuuities and further stimulus. I lay but little claim to the merit of originality in the observations I shall have to record; the geological structure of the regions in question having been fully investigated and most ably reported on by our Provincial Geologists; and in stating my own observations I shall endeavour, as far as the nature of the subject will admit, to avoid repetition of the facts and phenomena which have been so fully chronicled by them, and to confine myself to such supplementary details and to such deductions and inferences as my own enquiries and studies may enable me to make. As illustrative of some of the most interesting peculiarities of structure in the region under notice, I propose also to reproduce the arguments of Sir Charles Lyell and other observers relative to the retrocession of the Falls of Niagara; in corroboration of which I have noted some additional facts which have not hitherto been recorded.

SECTION I.

GEOLOGICAL FEATURES OF THE NIAGARA AND GORE DISTRICTS.

General Description.—The range of high lands which we are accustomed to denominate "the Mountain" running eastwards far into New York State—maintaining throughout a nearly uniform elevation of about four hundred feet above the level of Lake Ontario, and forming a platform or table land, in a basin of which Lake Erie is situated—bends round the head of Lake Ontario and continues in a north-easterly direction till it gradually disappears in the neighbourhood of the Bay of Quinte. The same geological formations do not, however, occur throughout the whole of this distance, as I shall hereafter point out. Along the northern shore of the lake, the ridge runs at a distance varying from four to eight miles from the shore, and presents a nearly uniform precipitous escarpment on its northern flank. Around Burlington Bay it approaches still nearer the margin of the lake, and at East Flamboro' bends to the northward and loses for the most part its precipitous character, and recedes gradually further from the shore, being not less than twenty-four miles distant in the rear of Toronto, though again, as we proceed farther east, we find it approach within nine miles. With the exception of the Niagara River, no streams of any importance empty themselves into Lake Ontario throughout this region, as might naturally be expected from the proximity of the ridge to the shore; and that remarkable river itself, as I shall hereafter show, presents anomalies and peculiarities perhaps nowhere else to be met with in nature.

The geological structure of this region is remarkably simple, exhibiting no faults or distortions of the strata; but it is far from being less interesting either to the geologist or the general observer on that acount. The rocks immediately underlying the superficial deposits consist of various members of the Silurian or oldest fossiliferous strata. They belong to those divisions of the Silurian system called the Middle and Upper Silurian, corresponding to, and no doubt contemporaneous with, the Carradoc, Ludlow and Wenlock groups of England. Nowhere do we find a more interesting region in a geological point of view. Referring to it, or rather to the continuation of the same formations in New York State, Sir Charles Lyell remarks:—"If we wish to see in perfection the oldest monuments of the earth's history, so far at least as relates to its oldest inhabitants, we must look here. Certainly in no other country are these ancient strata developed on a grander scale, or more plentifully charged with fossils; and as they are nearly horizontal, the order of their relative position is always clear and unequivocal. They exhibit, moreover, in their range from the Hudson River to the Niagara, some fine examples of the gradual manner in which certain sets of strata thin out when traced to great distances, while others become intercalated in the series. Thus, for example, some of the lime-stones which are several hundred feet thick in the Helderberg Hills, near Albany, are scarcely forty feet thick in the Niagara district: and, on the other hand, the rocks over which the cataract of Niagara is precipitated, dwindle away to such insignificant dimensions when followed eastward to the hills south-west of Albany that their place in the series can scarcely be recognized." Sir Charles adds "that a comparison of the fossil remains found in those ancient strata with those of a corresponding age and position on the other side of the Atlantic, shows that while some of the species are identical the majority are not, and that however close the general analogy of the forms may be, there is evidence of the same law of varieties in space as now prevails in the living creation." Since Sir Charles wrote the above remarks it has been ascertained on a more minute investigation that the number of species common to the Silurian rocks on both sides of the Atlantic is between thirty and forty per cent.; and it is a most interesting fact that those which are identical are precisely those which are found most widely diffused both geographically and in the order of superposition, and consequently seem to have been most capable of surviving many successive changes in the earth's surface.

Professor Sedgwick, at the recent meeting of the British Association in Aberdeen, in speaking of this order of geological formations, characterized them by a figure quaint and graphic,

though derived from modern feminine usages. He speaks of the lime-stone formations as a great girdle, or (in plain terms,) "hoop," over which Dame Nature had spread her "glorious palæozoic petticoat." Certainly nowhere on the face of the globe has this skirt attained a greater expansion, or been more gorgeously bedecked with the forms of ancient life, than in the locality now under notice.

To be continued in our next number.

Carrots.

We have frequently had occasion to define the value of carrots as food for cattle, horses, etc., and, we think, have established the fact, that one acre of carrots will more than represent, in value of product, ten acres of oats, and still the amount of progressed inorganic pabulum taken from the soil by twenty tons of roots and four tnos of the leaves of carrots, is only as follows:

	lbs.
Phosphoric acid	39
Sulphuric acid	57
Lime	197
Magnesia	29
Potash	134
Soda	103
And the elements of salt	85
Total	644

When carrots are fed upon the farm, a large proportion of these inorganic constituents find their way back to the soil, and in so progressed a condition, that the amount parted with in the form of milk, animal flesh, etc., can readily be spared, for they are fully compensated for by the progressed condition of that portion returned to the soil, added to the consequent progression of the inorganic matters contained in the soil itself.

It should not be forgotten that the carrot while growing, throws off matter, which although inferior to the portion assimilated by the carrot, is superior in status to the condition at which it was received into the organism, and thus it is prepared to furnish higher results for the future.—*Working Farmer.*

Training Colts.

The proper time to commence training colts is while they are quite young, as it is then an easy task to handle them. Colts that run till they are three or four years old, are frequently stubborn and hard to manage. My plan is, to halter-break them while they yet run with the mare, and get them so I can lead them wherever I wish. When thus trained, they can be broken to the harness with comparatively little trouble. I next bridle them and get them accustomed to the bit, and they soon become bridle-wise. At a year old I harness and drive them about, and when at two years old I put them in a wagon and drive them on the road. When they have become somewhat handy in driving, I give them a small load, and afterwards increase it. If the load is too great, before they are accustomed to drawing, they will fly back and refuse to draw. The principal cause of balky horses may very likely be the custom of loading them too heavily while breaking.

An instance which came under my observation, last winter, will illustrate this. A young man was drawing a heavy saw-log, and had a young colt hitched in with an old horse; the colt became fatigued with the exertion he had used, and refused to go any further, when the driver became vexed, and beat the poor beast sorely, which caused him to again spring forward with all his strength. Finding that the load did not follow, he again refused to draw, as might have been expected. If the load had been light enough to start at the first pull, the colt would cheerfully have done his share of the work.—*American Stock Journal.*

Agricultural Intelligence.

The Birmingham Cattle Show.

The twelfth annual Exhibition of this Society, embracing the midland counties of England, took place at the usual time, the beginning of December. Our readers are aware that it is only fat animals, consisting of cattle, sheep and pigs that are admitted to this exhibition, with the addition of domestic poultry and root crops. The display was considered by competent judges to have been fully up, both in magnitude and quality, to the standard of previous years; a result, considering the peculiarly untoward character of the past season, the scarcity of the keep, and the inducements offered to the farmer in the shape of high prices for the immediate sale of stock, must have been very gratifying to the promoters of of these meetings.

In the cattle department there appears to have been a slight falling off in the number of Herefords and Devons, but the deficiency was amply compensated by the additions to the ranks of the Scots, Long Horns, and cross breeds, or grades. The Shorthorns were in number about the same as last year, and carried off the leading honors of the Show. The Duke of Beaufort's Durham Ox, under 3 years, won the first prize, and gold medal, and the extra prize of £20, for the most meritorious shorthorn of any age or sex; and, although so young, he is described as being very perfect in form, heavy in flesh, and ripe in condition, and one of the very best specimens the judges ever saw. Colonel Pennant, of Penrhyn Castle, bore away the palm with a white beast, which, in addition to the first prize, received the

gold medal given for the best cow or heifer in the show. Mr. Stratton, as usual, exhibited some animals of great merit, that obtained premiums. In Herefords, Lord Bateman had some excellent specimens. Our readers will recollect that Mr. Stone's recent importations are from this celebrated herd. The show of Devons was not large, but comprised several fine animals, evenly fatted; the Prince Consort was a successful competitor in this department. It is somewhat remarkable that only a single specimen of the Welsh breeds was on exhibition; but of different classes of mixed or grades there was quite a number of excellent animals.

The sheep are represented as being the best collection for a number of years. The Leicesters were in large numbers, and many of them unequalled for weight and quality. The Southdowns and Shropshires were also excellent. The latter breed seem to be attracting increased attention in several districts of the British Islands. The innkeepers of Birmingham offered an extra prize of £10, and silver cup of equal value, for the best pair of long-wooled sheep, which were awarded to Mr. Lord of Driffield, Yorkshire. A similar prize and cup from the same parties, for the best pair of short-wooled sheep, were won by Lord Walsingham. In the department for pigs the principal feature was the class for Berkshires, of which there was a large and excellent collection.

The Scotch Mountain Sheep.—The committee on sheep for the late Show of the Connecticut River Valley Society, in their report, say:—The Black-faced Mountain Sheep of Scotland, exhibited by Isaac Stickney, Esq., of Boston, added much to the interest of the exhibition. They were a novelty. They have the appearance of being very hardy and heavy shearers; the wool long and suited to combing. They are evidently good nurses, or their lambs could not attain to a growth of 80 pounds at four months old. Your committee commend Mr. Stickney to the favourable consideration of the Society, and hope some suitable expression of our appreciation may in some form be tendered for his valuable contribution to the interest of our Fair.

Cotton Seed Cake.—It is estimated that a ton of manure from a ton of decorticated or husked cotton-seed cake was worth $27 86, while that from linseed oil cake was worth $15 72c, and from Indian corn only $6 65. Dr. Voelcker, chemist to the Royal Agricultural Society in England, as the result of several analyses, sums up the value of cotton seed cake, as compared with linseed cake, as follows:

"1st. The proportion of oil in all the specimens is higher than in the best linseed cake, in which it is rarely more than 12 per cent., and 10 per cent may be taken as an average. As a supplier of food, cotton cake is, therefore, superior to linseed cake. 2nd. The amount of oil in the different specimens differs to the extent of 5½ per cent.; say 13.50 to 19.19. 3rd. Decorticated cake contains a very high and much larger per centage of flesh-forming matters than linseed cake, and is therefore proper to give to young stock and milch cows. The dung, also, is very valuable. 4th. In comparison to linseed, there is much less mucilage and other respiratory matter in cotton cake. This is compensated by the larger amount of oil. 5th. The proportion of indigestible woody fibre in decorticated cotton cake is very small, and not larger than in the best linseed cake. 6th, and lastly. It may be observed that the ash of cotton cake is rich in bony materials, and amounts to about the same quantity as is contained in other oily cakes."

The Smithfield Fat Cattle Show.

The annual Exhibition of this club, originated 1798, was held at the usual place in Baker Street, London. December 10th, 11th, and 12th; and was honored with the presence of Her Majesty, the Queen, the Prince Consort, and the Empress of the French.

The *Mark Lane Express* observes:—

"It is well that the proposition of John Duke of Bedford, made in 1821, was not agreed to by the members of the club. That nobleman urged the breaking up of the club because "the markets of the metropolis and throughout the kingdom are abundantly supplied, the best and more profitable breeds of cattle and sheep have been brought into notice, and have made rapid and extraordinary progress in the estimation of the breeder and the grazier." The Duke, in conformity with this opinion—that the ends for which the club was associated were answered—withdrew his name from the subscription list. The withdrawal of such liberal support and so distinguished a presidency had the effect of arousing the energy of those members who remained, and who, in opposition to the great Duke, cherished the conviction that the ends of the club were much more extensive than he imagined, and so long as there remained cattle to improve, and farmers to improve them, never would be accomplished. The success of the club under the enlightened presidency of Earl Spencer and the Duke of Richmond, and the clever secreterial management of Mr. Brandreth Gibb and his brother, whom he succeeded, shows clearly enough that his Grace of Bedford mistook the dawn for the full daylight, and wished us to be contented with a few rare specimens of bovine excellence; whereas the real object of the Society has been to make the exceptional excellence of that day the rule of ours. Some few only in the Duke's time were aroused to the importance of breeding, to the heritage of good qualties; whereas now every tenant-farmer knows that it costs no more to have a well-bred animal than a bad one—nay, that the first expense of obtaining the good breed is swifty and amply repaid in its early maturity

and fattening properties. Not a man now, however small his tenancy, but looks for the traits of blood, in whatever breed he may wish to select from, and as the adaptation of breeds to the districts is now pretty generally known, he is not long in suiting himself. How vast an addition such a change as this, brought about in the public mind by the Smithfield Club, has made to the breed of the country, cannot be estimated. Some glimmerings of light upon this question we do gain, however, from a comparison of certain local data. In 1732, for instance, the 76,210 head of cattle sold in Smithfield market weighed on the average 370lbs., and the 514,700 sheep 28lbs. In 1794 a great improvement occurred, for the 109,064 cattle weighed on the average 462lbs., and the 717,990 sheep 35lbs. In 1821, when the Duke of Bedford said that the objects of the club were answered, this average was considerably advanced, but the last thirty years have certainly seen a prodigious advance upon the average of '21. The principals of breeding laid down by Bakewell, and practised by the Collins and Booths, have spread far and wide, and been accepted without a demur. Science has assisted the breeder and feeder—the first to reduce the bone and offal, and increase the meat; the latter to improve the roots, and to combine them in such a way with other alimentary material, as to clothe the rectangular frame with muscle and fat in a firm and regular manner. Whereas we had some six or seven distinguished herds, we now boast about sixty, the owners of which are not only doing all they can to support their own reputation; but are exerting a very sensible influence upon all classes of breeders. From every locality where such a herd resides proceeds a small wave of progress and stimulus, and never will the labors of the club or the objects of the show be brought to a close until every beast bred in the United Kingdom is a gold medal animal. Such stock as the Durham Ox of a past century, and Colonel Townley's Beauty and Beauty's Butterfly of our own time, by standing out with such marked distinctiveness, prove better than anything that the breeder's work is far from being done. That the continued exertions of the members of the club are needed, is proved by the show of this year. It seems in such classes to have fallen back, and as a whole not to be so good as many of former years. There are none of those striking forms which attract and astonish. The disappointment which those may feel who are most interested in this matter, will be materially modified however, when they consider the unparalleled difficulties that have beset the breeder and the feeder throughout the last two years. The drought of last year and the flooding rains of this may account for much. It will not excuse the imperfect forms we know, but it will excuse imperfection in the fattening process. In looking round the yard we must bear in mind the spare pastures and the want of water which characterized the summer of '59, the inclement autumn which followed, the cheerless spring which succeeded upon a long variable winter, the succulent unsunned grass, and sodden lair of the past summer, and then the mouldered hay and unnourishing roots upon which they have been since "got up." Under such circumstances our view may be changed, and we may come to consider it, conditionally, a successful show. Suffice it to say that if it is a good representation of the state of the fat stock market generally, it does not speak hopefully for the profit of the producer, while it warns the consumer that when the turn of the year is made, he may expect to buy meat much dearer than he does at present.

Those who wish to know how the show of this year stands with respect to other years, in point of numbers, will be glad to glance at the following table:

	1855	1856	1857	1858	1859	1860
Devons	17	21	32	28	37	33
Herefords	20	21	36	28	18	17
Shorthorns	40	42	43	42	47	36
Cross-breeds	7	12	65	35	17	19
Extra stock	9	12	—	14	—	14
Sussex	—	—	—	—	15	15
Norfolk	—	—	—	—	4	4
Longhorns	—	—	—	—	4	3
Scotch horn'd	16	13			10	11
Scotch polled					13	5
Irish ditto					1	1
Welsh ditto					9	3
Other pure bred	3	18	—	26	—	2
	112	139	176	171	175	163

The class of Shorthorns continued to maintain their ground, and out of the 36 animals of that section, 23 were exhibited by the breeders. Mr. Baker's steer of 3 years and eight months carried off the gold medal, and is remarkable for his immense depth; measuring in girth 9 feet 4 inches, fed with great regularity, and the spring of the rib surprising. There were other animals among the cows and heifers possessing perhaps equal relative merit; and not only in the Durhams, but also in the other breeds, there was apparent the absence of that excessive degree of fatness, which for many years was a principal characteristic of the Smithfield Show. Much of the meat was unfit for human food, and a great loss was not unfrequently entailed both on the butcher and consumer. It appears that more rational ideas now obtain at all the fat cattle exhibitions of Great Britain and Ireland, including sheep, though, perhaps, not swine The Herefords made a fair show, and were, on the whole, superior to those at Birmingham. The Devons formed a very ruddy class, much improved in quality of bone and meat; out of the 33 representatives of the breed 19 were exhibited by their breeders. The Devons very frequently fail in the rump, a defect that appears to have been less observable on this occasion. Although there were several good specimens of Sussex cattle, the reporter observes: "This breed does not contrast favorably with Shorthorns and Herefords, and certainly we were not the only

spectators who wondered why it is perpetuated."

Of the mountain breeds he remarks:

"It was quite refreshing to turn to the West Highland cattle. All lovers of the originality, the flash and fire of a mountain breed, paused as their eyes scanned the shaggy mantle, the deficient horns, and wild eye It was impossible to look at Mr Heath's second prize dun steer, without being lost for a time to the vexatious jostling of butcher's greasy men. The mountain breeze in fancy fanned the cheek, the foot trampled the springy heather underneath, and the rugged form before us, with coat all palpitating with the morning dew, assumed its native dignity, and bellowed forth its challenge to the leader of the advancing herd upon the echoing air. It is reported that the Royal Ladies of England and France spent more time in this class than all the others. The Duke of Beaufort's, who took the first prize, was also a dun shaggy fellow, girthing 8 feet 2½ inches, with fine springy shoulders, and wonderful quality. The greatest attention and the seduction of cake and barley meal have not rendered her submissive to familiarity, as our ribs can testify."

Of the Cross breeds the *Mark Lane Express* says:—

"We come now to as interesting a class as any in the yard, the cross or mixed breed, in which the spectator observes the results of many curious experiments. So far as the consumption of the country depends, it is to this mixed breed that we have at present to look, and it becomes therefore a matter of interest to observe which crosses appear to produce the most profit. It seems to be a recognized fact that a cross-bred animal developes earlier and fattens sooner than a pure-bred one, but that it is not capable of attaining to the same weight as a member of the pure breed, should the period of fattening be extended In the steer class, the first and second prizes are taken by Mr. Cartwright and Mr. Martin. The first is the result of a cross between a Polled Angus and a Shorthorn It has the contour of a Scot, with the depth in forequarter of the Shorthorn; colour, black. The mixture of the Aberdeen with the Shorthorn affords in Mr. Martin's red and white steer a compact and square form, to which good feeding has imparted a springy touch. The Norfolk and Shorthorn cross is exemplified in Mr. Beare's 2nd prize steer—a square heavy beast, with splendid hindquarters. Of the union of the Shorthorn and Hereford Mr Baker's splendid steer furnished a better example than we have ever seen. His girth was 9 feet 2 inches. His hips were thrown wide apart; his rump and twist were astonishing; his shoulders were well set, breast capacious, and great frame well and evenly covered. He did not retain the Hereford head, and had roan markings. We observed specimens of the same union in Mr. Tomb's and Mr. Martin's heifers—the former being of exceedingly good form and of a white color, and the latter rather small. The cross between the Shorthorn and the West Highland cattle was shown to result in a roan bullock with level back and a rather saucy-looking head, not quite accommodated to the proprieties of civilization. This was Mr. J. Beasley's steer. In Mr. Ainsley's steer the cross between the Aberdeen and Shorthorn gives rise to an animal of large proportions, with fine springing shoulders, great depth, unlevel back, deformed rump and defective thighs--color red. Connoiseurs in fruit affirm that there is a certain hour or two hours, during which every pear or apple we pluck arrives at its full perfection and flavor. Those who would enjoy it most must watch their time, never being too impatient or too dilatory. It seemed to us that Mr. Gibbs' heifer had just arrived at this luscious state of perfect ripeness. There was not an animal in the yard that gave us so much this impression; and though we have witnessed the good effects of a cross between the Alderney and Shorthorn in a very marked manner before, we never have yet seen so hood a specimen of its results. In color, white, with straggling red spots—a form perfect in evenness of fattening, and quality realizing all that one could desire A cultivated German alive to the insipidity of veal, or a Frenchman escaped from the traditionary influence of frogs or made dishes, would abandon himself to a new and delicious delirium, as morsel after morsel of this dainty meat, gently pressed between the palate and the tongue, gradually dissolved away. No wonder that she was *very* highly commended. Mr. Longmore's prize (Shorthorn and Aberdeen) heifer exhibits surprising development The cross of the Shorthorn with the Devon, shown in Mr. Ball's heifer, exhibits an animal very pretty and very small. The Shorthorn, it will be seen, is the backbone of the class, and stands in relation to other breeds of cattle very much as Leicesters do to other breeds of sheep."

SHEEP.

"The number of entries for 1857 and 1858 was 129 in each year: last year the number was 137. At the present meeting it is only 105; but, comparing the number of animals comprised in the pens of three as well as single specimens, we find 235 at the present show, against 289 at last year's unprecedented gathering. The scarcity of sheep food, owing to the late unfavorable seasons, sufficiently accounts for the lack of increase in a department of the Baker-street wonders, always so large and important. The Leicesters make an unmistakably good show both in numbers and extra quality. As wonderfully fine examples of what this breed may be brought up to, we cannot point to anything better than the gold medal wethers of Mr. Twitchell, of Wellington, Bedfordshire; their size is great, their mutton superb in the handling, wool very superior, while in beauty of countenance and fineness of offal they do credit to the breeder who has derived them from the flocks of Messrs. Sanday and Pawlett."

In Southdowns there was an evident deficiency in consequence of the absence of any specimens from the celebrated flock of the late lamented Duke of Richmond; but Mr. Ridgen, Mr. Kent,

and others, exhibited some remarkably fine and evenly fattened animals of this beautiful breed.

PIGS.

There were 45 entries of pigs, that is 27 of three pens, and 18 single specimens, making in all 99 animals, about an average show In point of breeding and fattening quality, this department never, perhaps, stood so high, and it elicited the warmest admiration. The Prince Consort was a successful competitor in this, as he was in the cattle department, the first premium was awarded to a pen of those little beauties of the White Middlesex breed, extraordinarily forward for their age The silver medal was awarded to a black Berkshire of immense length, and still more surprising depth of carcass, and is described as "a truly wonderful animal" In the Suffolk and Essex breeds there were several very superior specimens.

THE IMPLEMENTS.

"The galleries were, if anything, more crowded than ever There was an increase of exhibitors, and less room for each. The shifts some were put to, to make the best of their machines in the space allotted, were amusing; and though we had frequently to judge of the movement and character of the whole machine from a mere fragment, and to push our investigations by the light of analogy into dark corners, we have been successful in finding most of the entries. We will first give a passing mention of those which rank as the novelties of the show.

Messrs. Burgess & Key, yielding to the general demand, have at length brought out a combined grass-mower and reaper for two horses, price £35, and another on the same principle, for one horse, price £22 10s. It is a combination of Allen's grass-mower, and an improved form of Hussey's reaper. To adapt the mower to the purposes of corn cutting, the great central travelling wheel is shifted to the left, and a wheel of equal diameter is placed a little in advance of it on the opposite side. Upon an elevated seat, immediately to the left of this plain wheel, the driver takes his place, balancing and commanding the cutting bar, which makes a clear 4 feet 6 inches cut to his right. This plays at the back of the frame, receiving its motion in the usual manner from the travelling wheel on the extreme left. Behind runs a little wheel with wormed standard, fitting to a screw socket in the frame by which the driver can raise or depress the level of the cutting bar. A platform is attached for corn cutting, to be cleared by a man with a rake. This folds up, and with cutting bar, will pass through a gateway five feet wide. The adaptation of parts to the duties required appears very good. The one-horse machine, on the same principle, is very compact and simple. With a 3 feet 3 inches cut it will clear about seven acres per day. In this, however, the workman's seat takes its support from above the axle, and extends the breadth of the frame

With the intention of meeting the difficulties of an English harvest, Mr. Samuelson has produced a combined, very cheap, and good grass and corn cutting machine. As a mower only, the price is £22; for double purposes £24.—They are made for one or two horses. The frame is supported on two travelling wheels, both giving motion by internal cog gear. The cutting bar extends to the right, and for corn cutting is fitted with a platform, one man leading the horse and the other behind, delivering by rake either at the side or otherwise, in sheaf or swath, as desired. The platform is capable of being suspended, to enable the machine to pass through gateways.

Wood's combined machine for cutting grass and corn, price £35, is so generally known, and has been so well advertised, that no special notice need be made of it here. Sampson and Jewell of New Jersey, showed a very novel "paring and breaking cultivator," which received considerable attention, and a handsome testimonial from the Jersey Agricultural Society. A model only was exhibited in the gallery, but the real implement, some fifteen feet long, and seven feet wide, stood in the mews below, and this we saw. In operation it is intended to perform the entire work of the plough, scarifier and harrow. A diagonal frame carries four small paring ploughs, and between them revolve forks and knives to cut the soil, or furrow-slice as it rises, and to throw it to the offside of the implement, leaving a furrow for the four horses to walk in. This implement may be used separately for paring, ploughing, or scarifying, and may be employed as a traction machine for steam power. Spiked bands are made by a simple process, to embrace the hind wheels, to ensure the constant speed of the revolving forks, which are thrown in or out of gear as desired. For breaking up old turf and preparing the ground for roots, this seems, so far as we can judge, from the simple view of it in a quiescent state, one of the most economical implements that have come beneath our notice. Fitted for paring and breaking, the price is £25, delivered in London. The entire weight is 13 cwt

The patent hay and corn lift, exhibited by Mr. White, of Missenden, Bucks, deserves attention. It consists of a tripod formed of three poles, each 45 feet long, with 75 feet of 3 inch rope, and the necessary pulleys and slings. The body of the cart is lifted from the axle, and suspended at any height the builder of the stack requires, in two minutes from the time of the load drawing up. The man or men unload in the usual way, and all over-headed pitching is got rid of. It saves much labour The tripod is fitted with stretchers and rollers, so that it may be conveyed from place to place without being lowered; the price is £25.

Messrs. Dinsmore & Co., of Hyde-street, Oxford street, exhibited an air-pressure churn, wherein the globules which contain the butter are not broken by means of dashers, but in process of falling from end to end against a large body of compressed air pumped in from above. A longitudinal revolution is given to the churn, the axis passing through the voudge. It is said

butter is produced in ten or fifteen minutes : but we had no opportunity of judging. The price, with air-pump complete, of the 10-gallou size (with real capacity for 5 gallons) £2 5s.

Fourdri nier's portable hot air kiln deserves attention of all those who are troubled with damp unsaleable corn. The kiln is 12 feet by 6. Five quarters at a time may repose upon the perforated bottom. Between the false and the real bottom is a space of 9 inches, through which is driven, by means of a fan turned by steam or manual labour, a constant stream of hot air from a small stove placed at one end.—Thirty quarters can be dried in a day; and as the air does not come into contact with the fuel, the corn is kept perfectly sweet. The weight of the whole is about 35 cwt. The depth of the sides is three feet, but to these may be attached side-boards, and a tarpaulin covering. The price is £50. The use of merely cold air driven in this way through musty or damp grain will te nd often to sweeten or dry it sufficiently. Mr. Fourdrinier may be addressed Grove Terrace, Peckham; and we mention this because there are many not at the Show who this year may be glad to correspond with him.

A Combination Plough.—C. Atkinson, of Fulton County, Illinois, writes to the *Prairie Farmer*, as follows, of a plough which he has invented:—Mine is one plow combined. The combination is thus: I place on the same standard a full right and left plough, which requires but a single beam; under this beam I place an axle and wheels, and in the same space between the holds I place behind another pair of wheels. This makes a full carriage. Immediately back of the standard I put a mole or subsoil plow. With this arrangement I turn a furrow each way, opening a space of two feet, and the sod *lays* each side on two feet more. By this means I work four feet with the draft of two horses. And when I wish to plant I let the whole plow into action, and bring my hind wheels together, so as to constitute a roller, which, while it compresses the mole furrow, also in its revolutions, brings corn from a hopper into this furrow, leaving the ground planted. For this my team will be from three to four horses, and they work eight acres a day. One other item of difference between my plow and "Farmer jr's," is that I obtained a patent the 10th of April. This arrangement is applicable also to the old ground plow, and has the advantage of acting as a fertilizer, as it exposes one-half of the subsoil to atmospheric action, and admits in the mole furrow the water and frost to disintegrate the compact earth. For comfort to those who desire it, I place a seat for the driver, as the plow takes care of its own work, and the driver the team.

Managing and Feeding Working Oxen.—Oxen working on a stone drag, on the foot of a plow, on the sled tongue, cart spire, or twitching stones or timber, should carry their head up, as this enables them to do their work much easier those that work as leaders, forward, or other oxen, should carry their heads low, and have the yoke the right length, let the bows suit the neck; the yoke and bows to the leaders should set a little snugger than the nib oxen. Never use the whip but from necessity. When about to strike the young steer or ox, ask yoarself, "Will he know what I strike him for?" Let each ox have a name, and be sure he knows his name. Never speak a word to an ox without a meaning; have a particular word to start your team by, that all may pull together. Never hurry your team while riding behind them, lest they learn to haul apart. Oxen should be shod with a broad shoe, to travel on hard roads; the shoe on the fore foot should set back at the heel, nearly half an inch further than the roof bears upon it. Oxen are frequently lame by reason of short shoes. The best feed for oxen at hard work, is to give to each two quarts of meal, wet, mixed with good chopped hay, three times a day, and as much hay as he will eat; this is the highest feed working oxen ought to have, and on this they will work every day.—*Prairie Farmer.*

Uncle Sam's Farm.—The amount of land the United States Government has for sale is almost incalculable. All the people of fourteen States and five Territories derive their title to their land from the Federal Government, and the records and files evincing the inception of their rights are preserved in the General Land office, Washington. The public domain now covers a surface, exclusive of water, of 1,450,000,000 acres. The Government has sold about 120,000,000 acres of land during the last quarter of a century, for less that 150,000,000 dollars. It will thus be seen, Uncle Sam's farm is still sufficiently large for practical purposes, and though he should sell off lands for centuries to come, he would have an abundance still, even if he does not enlarge his borders by the annexation of Cuba, Mexico, and half the rest of the world.—*Rural New Yorker.*

Jonas Webb's Visitors.

This celebrated English Farmer, so especially renowned for his Southdown Sheep, has frequently at his table visitors from various countries of the world. The following extract from the Paris *Journal d' Agriculture Practique*, contains a Frenchman's view of Mr. Webb's domestic hospitality:

"Jonas Webb wished to retain us all for dinner. It was too good fortune to be able to study this great man in the bosom of the domestic circle. * * * * * * *

"In entering the saloon, we were necessarily obliged to make known our nationalities. I, said one of the visitors, am from Russia; I from

Sweden; I from Saxony; I from Prussia; I from Spain; I from England; and I from France—we were all there, coming from distant countries, animated by the single agricultural sentiment and soon sympathetically united.

"This revelation of our diverse origins was not wanting, I assure you, either in interest or emotion.

,'At dessert M. de La Trabonnais presented in English our acknowledgments of gratitude. Jonas Webb responded with simplicity and modesty. The representative of Saxony in turn expressed thanks in his own language to this illustrious man, then the representative of Prussia, then that of Spain, then that of Russia, then that of France—each in our own language we paid our tribute of honor to Jonas Webb.

"The hero of this improvized fete was profoundly moved. He gave us one of those good shakes of the hand which comprise all nations, and which said to all: 'It is one of the most precious advantages of agriculture to bring men together and to develop in them that fraternity which makes itself loved and blessed; and there can be no other combat on agricultural ground, than that of emulation."

How to Prepare Bones.—A correspondent of the New Hampshire *Journal of Agriculture* says:—With a sledge-hammer break the bones into pieces, of one, two, or three inches; take a hogs-head tub, put in two or three inches of hard-wood ashes, the same depth of bones; then ashes and bones until full; pound or press solid as convenient; fill with water or urine, all that it will absorb. If done in the spring or summer, by the next spring it will shovel up fully decomposed, the bones being as soft as clalk.

Horticultural.

Culture of the Chrysanthemum.

A correspondent of the *Gardener's Monthly* gives the following mode of growing Crysanthemums: "Take off cuttings," he says, about the middle of April, root them in sand, and, when well rooted, select pots of the size intended to flower them in. Place a few crocks in the bottom, then a few rough pieces of loam; add two good handsful of guano, with some cow manure; then fill up the pot with good rich loam. Then plant a dozen rich cuttings in a pot, pinching off the points, using a rose on the pot at the first watering to settle the soil. Leave them in the greenhouse for a week (a frame would be better where there is that convenience); then place out of doors, full in the sun. Place the stakes in the pots as soon as convenient, tying the shoots out as they grow, pinching off the points every three weeks, until the last week of July, and watering with manure-water twice a week, taking care never to let them suffer for water, or they will lose their lower leaves, which gives them a starved appearance. By following these directions, you will have plants which will be an ornament to any place, and amply repay your trouble."

Another correspondent of the same journal gives his modus operandi of growing these beautiful "winter flowering plants," as follows:—"Get two or three dozen of good sorts; and, as no doubt they will be in small pots, you must repot into larger, using a stiff, rather rich compost. After a little time, they will show signs of growing, when they must be evenly stopped by pinching. After this keep them dry till they begin to push forth, when water may be supplied; and if the pots are full of roots, shift into their flowering pots or plant out; in either case do not lose the ball. "Suppose that they are to be flowered in pots," therefore, after their final shift, plunge the pots in coal-ash, or in the soil, giving them plenty of room; and, in the extreme heat of summer, if more even is added, little, if any, water will be wanted. Staking is the next point. This done, little else will be required till the time comes for bringing them to their place of flowering; and, whether this be a greenhouse, conservatory, or verandah, you will be repaid tenfold."

Mode of Destroying the Gooseberry Caterpillar.

The following means for destroying the caterpillar, so injurious to the gooseberry plant is given in *Hogg's Gardener's Year Book*:—"After the leaves of the gooseberries have fallen in the autumn, obtain a quantity of tar and spread it over the ground where the gooseberries are growing to the depth of two or three inches, and see that it reaches close up to the stem of the bushes. Allow it to remain undisturbed during the whole of the winter, and late in the spring; dig it into the soil as you would manure. The effect of the tar will be found to be destructive to the larva, and to have no injurious influence on the plants."

Remedy for the Peach Borer.

Several remedies have been proposed for destroying this worm, so injurious to the peach-tree, but most of them are utterly worthless. A correspondent of the *Gardener's Monthly* gives the following: "Take about half a point of common salt, and sew it up in a small bag of strong cotton cloth, such as common Osnaburg will answer all purposes; tie this in the fork of the tree, where let it remain until the salt is dissolved by the rains that fall, which will be in the course of two years, and the work is done."

"The brine that runs down the trunk of the trees will kill both worms and eggs as they are deposited; besides, it proves a benefit to the tree. Should there have accumulated a hardening of gum at the surface of the ground, as is sometimes the case, it should be removed, so that the solution may reach the worms. It is equally as applicable for the apple-tree borer and aphis at the roots."

Native Hardy Grapes.

The following statement of experience in the culture of hardy American grapes, which we find in the Boston *Cultivator*, will be read with interest:

Messrs. Editors:—From the numerous varieties of native grapes which I fruited the past season, I find a few which should be grown by every family, as they are sure to ripen at the North before the early frosts.

The Delaware, which has at present the lead of all the natives, ripened with me this season from the 10th to 15th of September. I found that some of the fruit left on the vines, endured the severe frost of September 30th without damage, while the leaves were entirely killed, and the fruit of other varieties on the same trellis was frozen. This I attribute to its rich sugary, vinous juice, which is like wine itself. The vines are entirely hardy, productive, subject to no disease, and very vigorous. Vines two years out have this year made shoots twelve to fifteen feet in length, of strong, short-jointed wood. No gardener should be without this delicious variety, as it is superior to all others cultivated. It is the most productive grape I propagate, and keeps long after being gathered.

Blood's Black Seedling.—A very hardy variety, never mildews, a free grower, of dark color, covered with a thick bloom, good size, flesh sweet and moderately juicy. It ripened with me this season August 25th to September 1st,—a very desirable variety, which should be in every collection; keeps well after being gathered.

Logan.—Bunch, size and shape are those of a medium Isabella. Color black, quality very good, quite as hardy as the Delaware, and a very fine grower; ripened September 10th, and is a desirable variety as an early grape.

Hartford Prolific.—Hardy, vigorous, and very productive. Bunches large, shouldered, and rather compact, covered with a thick bloom; flesh sweet, moderately juicy. Ripened with me this season September 12th; should be in every collection. The dropping of this grape, sometimes complained of, may be obviated by judicious pruning and proper cultivation.

Marion.—Very hardy, and a prolific bearer, even under the most unfavorable circumstances; makes a dark-colored, rich, Port-flavored wine; ripened September 1st, and is a very desirable variety for wine making.

Rebecca.—I do not class this with the other varieties spoken of, as to hardiness, for in most situations it should be covered in the winter. I find my vines of the Rebecca where they are shaded some part of the day, are much more vigorous and productive in their habits than others not shaded. This is a white grape, juicy, sweet and delicious; it has no toughness or acidity in its pulp; ripened September 15th and will keep a long time after being gathered.

The Diana.—This variety with me this season was hurt by the early frost, which killed the leaves so that the fruit did not all ripen. It usually ripens well, before the early frosts. It is one of the most desirable grapes we have. The fruit, when fully ripe, abounds in fine sweet juice, vinous and aromatic; begins to ripen a few scattering berries the middle of September, which are sweet as soon as colored; keeps improving till the middle of October, if allowed to hang so late.

Concord.—This is a very vigorous and healthy grower, and bears abundantly; some of my vines ripened their fruit this season September 25th, but that of others more exposed, was injured by the frost of September 30th.

I would here remark, that most failures in growing young vines, occur through the ignorance of those setting them out. The roots should not only be set in plain earth or mould, and not be permitted to come in immediate contact with manure or compost, especially when unfermented. In setting out my standard vines, I invariably incorporate a portion of sand or street wash with the compost; it keeps the ground porous and warm. Thus the wood matures much earlier, which naturally hastens the ripening of the fruit.

Geo. Davenport.

Dedham, Mass., Dec., 1860.

We thank Mr. Davenport for the above remarks. He is one of the most successful cultivators of the grape in this section. Even the past season, unfavorable as it was for the ripening of grapes, he brought many kinds to perfection, and took the first premium of the Massachusetts Horticultural Society for the best outdoor grapes at the annual exhibition. The results of his experience are eminently worthy of attention from all who wish to learn the comparative merits of varieties for the northern section of the country.

The Hyacinth.—Like the Rose, the Hyacinth is a universal favorite, and although great diversity of taste exists in floral matters, the merits of the Hyacinth are never questioned. It is loved by every one for its beauty and its fragrance. It will thrive in almost any soil; and will flower almost as finely when grown in water as when planted in the richest compost.

Ventilation of the Apple Barrel.—By this we mean the boring of holes in the head staves of the barrels that will allow the escape of the moisture that is constantly passing off from the newly gathered fruit. We hazard nothing in the statement that one-half the fruit sent to this market this season, so far has been materially injured from this cause. The effect of cofined vapor upon the apple is not at once apparent. The fruit appears uncommonly bright on the first opening—but as the surface dries off the apple begins to grow dull looking, and if a light skinned apple in a day or two will present the appearance of half-baked fruit.

But this steaming from confinement not only injures the sale of the fruit, but to the great disappointment of the consumer, his fruit does not keep as he supposed it would, and as the variety of apple he purchased led him to suppose it would. Premature decay is sure to follow as a consequence of this want of ventilation.—*Chicago Fruit Dealer.*

How to Plant Willow.—Mr. Skean gives the following directions to the *Farmer and Gardener.* "The proper time to plant is before the sap starts in the spring. Take your limb or pole, point it with a keen hatchet, and having made a hole with a suitable crow-bar, insert the pole, tapping it on the top with a mallet to make it firm; or, what is equally good, ramming the ground firmly around it with a common post-rammer. The pointed end should be inserted, if possible, until it reaches the water, otherwise they will not thrive so rapidly. The willow succeeds best where the water is fresh, and not stagnant."

In-Door Plants.—Plants in rooms should be watered more frequently than in green-houses, and they should be syringed over the tops *every evening* about sunset, in dry weather. The syringing will not injure a carpet upon the floor, if the water is wiped off immediately after the drip ceases to fall from the leaves.

Those that I would recommend as the best to flower in parlors are the semi-double, and that have a green calyx; also all the single varieties. The plants should have air, by letting down the top sash whenever the weather is mild, or when there is no frost in the atmosphere, for a short time, though it may be cool. Camellias require a great quantity of air; they will bloom in a room where the heat varies from 35° to 50°; but will bear a much greater heat, and bloom well, and on some occasions they will flower, even though the earth on the top of the pot has been slightly frozen, but extremes, either of heat or cold, do not suit them.

I have had Camellias bloom finely on tables, as above, where the sun did not shine on them; but, in such cases, they should have a great quantity of light.

I generally use soft water for my plants, both winter and summer, and it is better if warmed to the same temperature of the room in winter. As to general watering I think it best, whenever the top soil begins to get dry, to water well and freely, so that the water may pass to the bottom roots, and to repeat the watering when the surface begins to get dry, to water well and freely, so that the water may pass to the bottom roots, and to repeat the watering when the surface begins to dry again; when Camillias are blooming or growing, they require more watering than at any other time.

In the latter part of May, after danger of frost is over, the plants should be removed to the open air, and placed in a situation where they will be shaded from the mid-day sun. Here they will only require watering occasionally, until time for re-potting, and removing to the house, in the autumn.—*London Floricultural Cabinet.*

Gishurst's Compound and Mildew in Gooseberries.—A writer in the English Cottage *Gardener,* who had used dressings of the usual mixtures of soft soap, soot, dusting with sulphur, &c., to cure what is called mildew, without avail, syringed all the vines in one vinery with Gishurst's compound in the mild form of two ounces to the gallon of water, and not the least sign of the disease had appeared (Nov. 1) at the time of writing. He also syringed wall peach trees, on which the mildew or disease (for he regards it as distinct from mildew) had become visible, with about three ounces of the compound to the gallon of soft water; in a few hours the disease had turned quite black, and the trees have made an excellent growth.

The same writer speaks enthusiastically of this Compound's effect upon insects. He used it first on a three light frame of verbenas, and they were all cured of the fly at the first dressing, without injuring the plants. No second dose is necessary, if properly mixed in soft, warm water. He closes with the assertion, "you may depend it is one of the greatest boons to the gardeuer for more purposes than destroying insects."

Curious Alleged Discovery in Floriculture.—It is said that Mayor Tiemann, at his paint factory in Manhattanville, has accidentally made a discovery which threatens to revolutionize floriculture. One of the factory hands having thrown some liquid green paint of a particular kind on a flower-bed occupied by white anemones, the flowers have since made their appearance with petals as green as grass. The paint had in it a peculiar and very penetrating chemical mixture, which Mr. Tiemann has since applied with other colors, to other plants, annual, biennial, and of the shrub kind—the result being invariably that the flowers so watered took the hue of the liquid deposited at their roots. By commencing experiments early next year, during seed time, and applying different colors, we shall no doubt soon be enabled to "paint the lily," which was Solomon's ambition.—*N. Y. Tribune.*

The Climbing Plants.—No class of plants are more useful in the hands of the skillful gardener than the climbers. They possess almost miraculous powers, transforming any unsightly out-building into an object of real beauty. No good gardener will have any bare board fences about his premises,—all are wreathed and festooned, and made gay and graceful. Then for covering cottage verandahs, what can equal this class of plants? They put to the blush all the expensive work of the architect, and the builder, and make the poor man's cottage appear more elegant—possessing more of nature—more of quiet grace—than the palace of a prince. For this purpose, the hardy varieties of grape vines are very useful.

The *Virginia Creeper* is an excellent climber, and although a native of our own land, much more popular in Europe than with us. Its leaves are digitate, of a dark rich green in summer, and becoming of a rich crimson in the autumn. It throws out little roots at the joints, by which it fastens itself to anything it touches.

The *Honeysuckles* we have in great variety, and everybody loves them, though we are sorry so few show their love in a practical way.

The *Periploca* or *Virginian Silk* is a rapid growing, fine climber, and will twine itself round a tree or any other object for twenty or forty feet in height. The foliage is bright and glossy, but the flowers are brown and not showy.

The *Chinese Wistaria* is one of the most rapid growing of all climbing plants, after it gets a fair start. Sometimes, for some unaccountable reason, it refuses to make any material growth for a year or two after being planted, but all at once takes a start and makes a splendid growth, throwing out shoots ten, fifteen, and twenty feet in length, in one season. It commences blooming early in June, and a large plant will be literally loaded with thousands of rich clusters or pendulous racemes of delicate, pale blue blossoms, so numerous that the plant seems to be a floral wreath. The racemes are from ten to twelve inches long, and well filled with delicate sweetly perfumed flowers. The foliage is abundant, and of a pleasant lively green. It succeeds best in a rich deep loam. It does not flower until the plant gets strong, and the older the plant the more freely it seems to flower.

The *Climbing Roses* are now to be had of almost every variety of color, and should be extensively planted.

The *Bignonia* or *Trumpet Flower*, is a magnificent climbing plant, producing large trumpet-shaped climbing flowers with something of an orange tinge, and of great beauty. They are produced in clusters. A good plant trained to a pillar or trellis, when in flower, presents a most splendid sight.

Aristrolochia, or *Dutchman's Pipe*, is an elegant climbing plant, with very handsome, broad leaves, and very curious flowers, closely resembling a meerschaum pipe, and hence the name. It grows fifteen or twenty feet high, and begins to flower in June. It makes a splendid shade for a verandah or summer house.—*Rural New Yorker.*

On the Culture of the Camellia in the Parlor or Drawing Room.—I had three tables made, about five feet long and three feet three inches wide, with strides around the edges, so as to be about a third of an inch above the margins all round, and then common (sawed) laths cut into short pieces; and placed about two inches apart on the top surface of the tables, so that the water which ran from the flower-pots could pass from one part of the table to another, crosswise or lengthwise, and pass out at a notch in the edging spoken of above; by which means the pots would not stand in the water which runs from them. These tables I placed far enough from the windows and walls to allow a person to pass all round them, and to water and syringe the plants, which made a space of about one and a half or two feet in front and at the ends. The tables should be of a height in proportion to the windows, which windows should be made to let down at the top. By that means the plants can have air in upon them, without a strong current passing through them. This I consider a very important matter, as a strong draught or current of air is very injurious.—*Exchange.*

Packing Fruit.—A correspondent of the *Gardener's Chronicle* packs apples in shallow boxes, in dry bran. He finds it light, clean, elastic and excellent for packing. Packing peaches, nectarines, apricots and grapes to go long distances, he wraps the fruits snugly in tissue paper. Grapes are best sent in paper bags, in single layers, and the bran run in between layers of bags to keep all firm. Wheat bran is used after being sifted to get out all the small heavy particles of husks.

Domestic.

Good Housekeeping.

So much "Advice to Housekeepers," is constantly going the rounds of the press, that we feel a little diffident about broaching the subject; but as it is a prolific theme, and one of general interest, inasmuch as the comfort, health and happiness of every family depends very much on good housekeeping, we will venture a word. These writers on housekeeping—who, by the way, are generally men,—seem to think that one word covers the whole ground, and that is—work. To work early and late, to scrub and scour, and churn, and sweep, and wash, and bake—this, according to their theory, is good housekeeping. There never was a greater mis-

take. Some of the most notable workers we ever knew, were poor housekeepers. They *made* as much work as they *did*. To keep your whole house—garrets, closets, cellars—everything neat and clean; to see that nothing is wasted; to serve up well cooked food in an attractive and orderly manner; to have "a place for everything and everything in its place,"—this is good housekeeping. This sounds formidable enough, but one head and one pair of hands very often meet all these requirements, and that too, in an easy, quiet way, that seems like magic. It requires skill and forethought to keep all straight, but by giving everything its proper time and place, it is easily accomplished.

If a lady be mistress of a large family, it by no means follows that to be a good housekeeper, she must prepare every morsel of food, or do all the washing, sweeping, milking, and the thousand other things to be done in a family. She may not do any of them, and yet be a notable housekeeper. Any one can do the hard, rough work, but not every one can plan it rightly; and this planning, management, or whatever you please to call it, is the grand secret of perfect housekeeping. Without it, one may work hard all the time, and still have a comfortless and disorderly home, while with it, a vast amount of work is performed with little bustle or fatigue, and the housewife has leisure for more refined occupations, or for mental improvement. We have known many notable housewives, who thought no farmer's wife or daughter should take time for music or reading, or even fine needle work, but we cannot understand why the workers should not enjoy such pleasures, as well as the idlers of fashion.—*Mrs. Sarah S. Socl well, in N. J. Farmer.*

Use of Snow in Cookery.—A correspondent of the Boston *Cultivator* says:—"Put corn meal into a good-sized wooden or other bowl, with sugar and salt to the taste; then add twice or three times its bulk of snow, and stir it together with a spoon. When well mixed, it appears like so much dry meal or snow. Fry a little on a hot griddle; if it cooks too dry to turn well, add more snow; if too wet to be light, add more meal, when just right, fry on the griddle in convenient-sized cakes, and they will be as light as can be desired. I claim to have first suggested, to the best of my knowledge and belief, the above sure test for arriving at the right proportions, namely, trying a little on a hot griddle, and adding corn meal or snow, as the case may require."

Lemon Pie.—Take two quart bowls; in one squeeze three lemons and extract the seeds. In the other beat three eggs, with three tea-cups of sugar, grate in some nutmeg, and set them aside. After mixing the crust, which I do with half a pound of lard to rather more than a pint of water, sometimes rolling it out and spreading on it a quarter of a pound of butter—at other times omitting most of the butter—put the under crust on two plates; then mix the contents of the two bowls, pour it on the crust, cover them with the top crust, and bake immediately, as the lemon juice and eggs soon harden together.

If a more simple pie, add a teacupful of boiled corn starch. No milk.

Sally Lunn.—I am tempted to send my recipe for this most delicious tea bread, which once eaten at your table, will cause your friends to rejoice when asked to come again.

Take a stone pot, pour in one pint bowl of sweet milk, half a teacup of baker's or other yeast, one-quarter of a pound of melted butter, a little salt and three beaten eggs. Mix in about three pint bowls of flour. Let it stand several hours, or until quite light; then put into Turk heads or other tin pans, in which Sally should again rise up before being shoved into the oven, to be "brought out" and presented to your friends as the beauty and belle of the evening.—*Cor. Country Gentlemen.*

Little Plum Cakes to keep long.—Dry one lb of flour, and mix with six ounces of finely powdered sugar; beat six ounces of butter to a cream, and add to three eggs well beaten, half a pound of currants washed and nicely dried, and the flour and the sugar; beat all for some time, then dredge flour on tin plates, and drop the batter on them the size of a walnut. If properly mixed it will be a stiff paste. Bake in a brisk oven.

Queen Cake.—Mix one pound of dried flour, the same of sifted sugar and washed currants; wash one pount of butter in rose-water, beat it well, then mix with eight eggs, yokes and whites beaten separately, and put in the dry ingredients by degrees; beat the whole an hour; butter little tins, tea-cups, or saucers, filling them only half full; sift a little fine sugar over, just as you put them into the oven.

Seed Cake.—Beat one pound of butter to a cream, adding gradually a quarter of a pound of sifted sugar, beating both together; have ready the yolks of eighteen eggs, and the whites of ten beaten separately; mix in the whites first, and then the yolks, and beat the whole for ten minutes; add two grated nutmegs, one pound and a half of flour, and mix them gradually with other ingredients, when the oven is ready, beat in tfiree ounces of picked carraway seeds.

Lemon Cake.—Beat six eggs, the yolks and whites separately, till in a solid froth; add to the yolks the grated rind of a fine lemon and six ounces of sugar dried and sifted; beat this quarter of an hour; shake in with the left hand six ounces of dried flour; then add the whites of the eggs and the juice of the lemon; when these are well beaten in, put it immediately into tins, and bake it in a moderately hot oven.

Moving Pianos in Winter.—A piano if transported in very cold weather is liable to acquire so low a temperature that on being introduced into a warm room it condenses moisture from the atmosphere; and to the astonishment of the owner. the case, strings and other parts suddenly become bathed with perspiration. The instrument is thus exposed to injury. The difficulty may be avoided by throwing open the windows of the apartment in which the piano is received, so that the temperature of the air and of the instrument will be equal. After thus remaining for a short time the room may be very gradually warmed, and no condensation will take place.

How to Burn Coal.—Nine out of ten who attempt to burn coal in a stove, waste about as much coal as is necessary to be consumed for the obtaining of all the heat desirable. Observe the following rules: We will suppose the stove cleaned out. First, To make a coal fire: Put in a double handful of shavings, or light kindling-wood instead. Fill the earthen cavity (if the stove has one,) nearly full of chunks of dry wood, say four or six inches in length. On the top put a dozen lumps of egg coal. Light with a paper from beneath. In ten minutes add about twenty lumps more of coal. As soon as the wood has burnt out, fill the cavity half to two-thirds full of coal. The fire will be a good one. The coal will, by following these directions, become thoroughly ignited. Second, Never fill a stove more than half or two-thirds full of coal, even in the coldest weather. Third, When the fire is low, never shake the grate or disturb the ashes, but add from ten to fifteen small lumps of coal, and set the draft open. When these are heated through and somewhat ignited, add the amount necessary for a new fire, but do not disturb the ashes yet. Let the draft be open half an hour. Now shake out the ashes. The coal will be thoroughly ignited, and will keep the stove at high heat from six to twelve hours, according to the coldness of the weather. Fourth, For very cold weather. After the fire is made according to the rules first and third, add every hour about fifteen to twenty lumps of egg coal. You will find that the ashes made each hour will be about in that ratio.

This advice relates to cylinder stoves of medium size, as the amount of coal to be fed in depends on the space of the fire-box.—*Scientific American.*

Westphalian Hams.—The justly celebrated Westphalian Hams are cured in a pickle prepared as follows:

Boil together over a gentle fire six pounds of good common salt, two pound of powdered loaf sugar, three ounces of saltpetre. and three gallons of spring water. Skim it while boiling, and when quite cold, pour it over the hams, every part of which must be covered with the brine. Hams intended for smoking will be sufficiently salted in this brine in two weeks; though if very large, more time may be allowed. This pickle may be used repeatedly, if boiled, and fresh ingredients added. Hams, before they are put in the pickle, should be soaked in water, all the blood pressed out, and wiped dry. Much of the excellence of the ham is depending on the smoking. This should be done in such a manner that the ham shall be cool and perfectly dry throughout the whole operation. If too near the fire, they will be heated and their flavor injured; if the building be too close, the hams will be wet, and taste as if dipped in pyroligenous acid. At Hamburg, where large quantities are prepared, the hams are smoked in the upper story of high buildings, while the fires, which are made of oak or maple chips, are made in the cellars. In passing through such a length of pipe to the chambers, the smoke becomes cool and dry; and the flavor of the hams is excellent. Hams intended for summer use, may be kept in any way where they will be dry and cool, and secure from the fly bug. Washing with lime or putting in bags of coarse cloth, one ham in each, is practised by many. Some keep their hams through the season in the smoke house, making a smoke under them once or twice a week.—*Wisconsin Farmer.*

Receipt for Curing Meat.—As the season has come round again for curing meat for the season, it may be acceptable to many readers—especially to many fresh readers—who may not have either preserved it, or have before seen it, to reprint our receipt for curing meat. We will add, that after using it for about twenty years, and comparing the hams so cured with others cured by a dozen different processes, we are more than ever convinced of its superiority. It is this:

To one gallon of water,
Take 1½ lbs. of salt,
½ lb. of sugar,
½ oz. of saltpetre,
½ oz. of potash.

In this ratio the pickle to be increased to any quantity desired. Let these be boiled together, until all the dirt from the sugar rises to the top and is skimmed off. Then throw it into a tub to cool, and when *cold*, pour it over your beef or pork, to remain the usual time, say four or five weeks. The meat must be well covered with pickle, and should not be put down for at least two days after killing, during which time it should be slightly sprinkled with powdered saltpetre, which removes all the surface blood, etc., leaving the meat fresh and clean.

Several of our friends have omitted the boiling of the pickle, and found it to answer equally as well. It will not, however, answer *quite* so well. By boiling the pickle, it is *purified*—for the amount of dirt which is thrown off by the operation, from the salt and sugar, would surprise any one not acquained with the fact.—*Germantown Telegraph.*

KEEPING WINTER BUTTER.—People who wish to keep their butter for winter use in the roll, can easily do so by covering their rolls, after laying them in the vessel in which they are to be kept, with a thick cloth—two thicknesses are better — which has been soaked in a strong pickle to which a very little saltpetre has been added. We have preserved butter all winter this way, and nearly if not fully as good as when put away.—*Dollar Newspaper.*

PARISIAN MODE OF ROASTING APPLES.—Select the largest apples; scoop out the core without cutting quite through; fill the hollow with butter and fine, soft sugar; let them roast in a slow oven and serve up with the syrup.—*Maine Farmer.*

The Dairy.

POINTS OF COWS.—Mr. A. L. Fish, a dairyman of Herkimer County, N. Y., gives in the Little Falls *Dairyman's Record*, some observations on this subject. He says:

"I have never known a cow, with soft, fur-like hair and mellow skin, appearing yellow and gummy at the roots of the hair when parted with the hands, that was not a good butter cow, and when fattened, would mix tallow well with flesh. Instead of heavy head, horns, neck and shoulders, and comparatively light hind quarters, which is characteristic of the opposite sex, she should show an opposite design, by a feminine countenance, light head, neck, and shoulders, widening backward from her chest to the loin and hind-quarters."

The Poultry Yard.

BEST FOOD FOR FOWLS.—What kind of food will cause hens to lay the most eggs, is a question much easier asked than answered. It will probably never be decided. Some recommend feeding oats; others say barley, buckwheat, etc.; and we say that it is a judicious rotation of feeding that produces the best results. No one kind of food will make hens lay well, unless they are provided with the requisite concomitants, such as fresh meat, in some shape or other, when worms or insects are not to be had; charcoal and calcareous matter to assist nature in forming the shell of the egg, all of which is found in a wide range, without our special attention, or at least enough to cause a hen to lay her maximum number of eggs. Broom-corn seed is a good grain to feed with, but hens will not eat it in its whole state with that avidity that they will eat other grains; but when ground, it is highly relished by fowls. Wheat screenings we have found excellent feed for promoting fecundity, and sunflower seed is considered good feed for fowls, but they must be fed to them sparingly. No animal is easier kept than fowls. No kind of food comes amiss to them. When at liberty, they obtain their living promiscuously, and pick up every thing that can be made use of as food, in the farm-yard; even the worms, grubs and bugs give them most nutritious food; and it has been satisfactorily proved there is no substitute for potatoes, if they are boiled, mashed, and mixed with a little corn meal, middlings, shorts, or even bran, as a promoter of laying. The more varied the food, however, the better. As to green food, they are partial to lettuce, cabbage, endive, spinnach, chickweed, grass-seeds, etc. Regularity, when fed by the hand, should always be observed in the hours of feeding, also in the quantity of food given. Do not surfeit them one day and starve them the next, but give the fowls their food as regular as you take your own meals. —*Country Gent.*

Veterinary.

Relations of Veterinary to Social Science.

Inaugural Address by Prof. John Gamgee, Delivered Wednesday, October 31st, 1860.

[The following lecture was delivered in the new Veterinary School in Edinburgh, before a Miscellaneous audience, including of course the regular students. There is much in this inaugural address that will interest our readers, and prove suggestive to our farmers, as well as to the inhabitants of our towns and cities, where sanitary reform has yet a great work to do. To social science the most earnest, practical attention is now being paid in the British Islands.] —ED.

"My main object on this occasion is to point to veterinary students the real position of the science they have to learn and the art they have to practise, and elevate their thoughts from the mere trade, which is all essential in his way, and which the wants or the greed of man too soon wed him to.

But I have another object in view, viz., availing of the privilege of a mixed audience, in fact, addressing the public, I consider it my duty to state, as clearly as possible, the various ways in which our profession, when followed out by enthusiastic and enlightened men, can confer advantages on the world at large.

I trust, gentlemen, that by the time I have concluded this lecture, I may have stated something which it is as well to state to students entering on the arduous task of learning a profes-

tion, and which there cannot be much harm in saying to them in the presence of a number who represent the non-professional multitude.

The relations of veterinary to social science are varied and numerous. No period could be more appropriate to draw public attention to them than the present. Social science is better understood than formerly, and the general feeling is eminently in favor of inquiry on all subjects relating to that important department of science, Public Health. A yearly increasing number of students flock to our colleges. The profession is growing in numbers, and it is essential to point out the many outlets for expending labour and talent of the best kind in a manner most conducive to public interests, and calculated to enhance the social standing of the veterinary surgeon. On former occasions I have strenuously opposed the opinion, that our profession is overstocked. I have, however, stated that there is a very ample field for the able and industrious. Mediocrity abounds. We now need excellence. But the best way of ensuring a higher class of men is to prepare the material for them to work at, and point out the many ways in which they can develop their powers, either as observers, generalizers, or with some simply as plodding workers in a field opened out for them by minds of a broader grasp.

Legislation has much to do in order to ensure that we shall get that share of public work which necessarily falls to us, and which can be undertaken by no other body of men; but, to attract the notice of legislators, and assert our worth in fulfilling many important duties, we must certainly be better prepared than we have been.

The subjects to be investigated, in order to reap practical benefits from scientific labor on sanitary matters, are vast and comprehensive. Their simple enumeration suggest to any one that there is much to be done, and, indeed, that there is no limit to these all-absorbing inquiries. Let us for a moment dwell on the part which should engage the veterinary profession.

In the first place, men and animals are subject to similar diseases—to diseases communicable one to the other, and to diseases which spontaneously originate either in man in some instances, or in the lower animals in others, and are transmitted from first to second, or second to first, without other means of development or propagation. The study of diseases, in their comparative relations in different animals, constitutes the science of Comparative Pathology. It must be obvious to all that the amount of danger man incurs by living amongst animals, under different circumstances, should be known, but on this all-important subject we need means of determining the spread of diseases in animals, their nature, and the extent to which they are committing ravages. That there are many unsuspected sources of disease in man, from the prevalence of disease in animals, is often suggested. But positive facts are with difficulty obtained. I must illustrate my meaning. In different parts of England, Scotland, and Ireand, cattle are subject to anthrax, commonly known as quarter-evil, or by the more ludicrous epithet, "black leg." We have to thank our northern latitude for the rare development, in these cases, of the virulent anthrax poison, which destroys many human beings in warm climates. So destructive is this poison, that flies resting on the carcases of animals that have died of this disease, or even on the parts affected in the living animal, may fly on to a man's face or hand, induce malignant pustule, and death in a short time. Though such accidents are doubtless extremely rare amongst us, we must not take it for granted that they do not occur. Dr. Keith, of Aberdeen, related a case to me where disease and death spread through the family of a man who dressed the carcase of an ox that had died of quarter-ill; and had we better means of collecting information on these subjects, many similar instances would doubtless come to our knowledge.

A cutaneous disease of very common occurrence in cattle, and which generally receives the name of ring-worm, is a pustular eruption communicable to man; and I have often seen bad boils—a furunculoid eruption—on the hands and arms of those attending these animals, which has led to considerable indisposition, and been difficult to cure.

Again, I may mention the vesicular murrain so prevalent in cows, attended with the development of a virus, which is often squeezed into the milk-can as the cow is milked. Such milk, drunk warm, will kill calves and pigs, and induce fever and cutaneous eruptions in men. Why shall it not be attended with dangerous and fatal consequences when partaken of by the infantile portion of the population, which consumes so large a quantity of the dairy produce.

But of late years considerable interest has been excited by the metamorphoses of parasites. In a piece of pork a few yellow specs of transparent vesicles, which do not appear of the slightest importance, may in reality be tapeworms in one stage of development, for the destruction of which we have to hope for prolonged boiling or efficient roasting. If the meat be eaten underdone, a parasite at once develops in the human intestine, which sometimes baffles human skill to displace it.

The veterinary surgeons throughout the length and breadth of our land, should be accurately acquainted with the parasitic diseases of animals, and I know of no more engrossing and satisfactory study than that of Helminthology.

Therefore, gentlemen, the sources of disease in man which are to be discovered by studying the diseases of animals, are far from few and

trifling, and facts regarding them should claim the attention of the veterinarian. On this very interesting subject I have to recommend perusal of two very lucid and elaborate papers by Dr. Lindsay of Pesth, and my esteemed friend Dr. Richardson, of London. Both these important contributions to comparative pathology were published in the first volume of the *Edinburgh Veterinary Review;* and I am proud to think that our annals of comparative pathology should contain the contributions of men so fitted to act as pioneers in the study of the sciences to which that journal is devoted.

Secondly, the diseases of men and animals are often due to similar causes. They are the result of cognizable agencies which operate alike on all living things, and their investigation, though almost exclusively engaged in by the medical man, should occupy the time and attention of enlightened veterinary surgeons. The evil results of over-work, over-crowding, absence of light in stables, as in dwellings, of artificial diet, of the nature of food as changed by modern cultivation, and the influence of such changes on animals, all constitute vast subjects for enquiry. The mysterious nature and operation of enzootic as of endemic influences, of epizootic as of epidemic influences, of miasmata and contagion, should as constantly occupy the members of our profession, devoted to the study of sanitary subjects, as members of the profession of human medicine.

It is a fact worthy of notice that the medical officers of health of the city of London—amidst their most interesting and intricate researches as to the influence of sewerage emanations, and a host of similar causes that are to be observed in all crowded cities, contributing to fill our hospitals and swell mortality lists, specially allude to the injurious influence exerted by stables and byres. In these matters, backed by adequate authority, veterinarians should effect much good. The *Medical Times*, in an article on the development of sanitary medicine, commenting on a report by Dr. Lankester, says,—"Stables are necessary nuisances. Horses or donkeys we must have; doctors as well as lords and costermongers; but then we ought to take especial care that they be kept in a suitable and laudable manner—*i. e.*, up to the level of scientific sanitary requirement. But how seldom are they so kept! There are," writes the doctor, "few sources of nuisance which are more constantly complained of than ill-kept and ill-drained stables." In his own parish, he Dr. Lankester, has waged great and Garibaldian (successful) warfare against these Augean quarters, and reports the abatement of 208 out of 268 stable nuisances complained of. Happily, as it appears the owners of horses are more readily worked up to proper sanitary sentiments in behalf of their quadruped occupants, than householders usually are in behalf of their biped tenants. As Dr. Lankester says—"The references to the notices of improvement in the stables showed that the owners were quite alive to the value of the health of the animals that lived in them; a response which it is sometimes difficult to arouse in behalf of the human occupants of houses needing sanitary amendment." Dr. Lankester's experience is encouraging, and it shows how, backed by the influence of authority, a person can accomplish that which, on the simple advice of professional men, can rarely be secured. Many of us have waged war against the denizens of filth and disease in which cows are kept, but we cannot boast of the success which has attended the assiduity of Dr. Lankester as medical officer of health.

Sanitary reformers, in considering the history of epidemics, have of late years disregarded far too much, in my opinion, the contagious nature of diseases. Cholera, typhus, yellow fever, &c., undoubtedly most destructive under the influence of defective hygiene—are maladies characterised by the development of a specific poison, which the Germans have termed the *contagium*, or principle by which contagion is effected. The investigation into the nature of *contagium*, of the many circumstances which influence and favor, or check it, presents to the veterinarian one of the most practical objects for enquiry that I am acquainted with. As Dr. Richardson says, in the article before alluded to, the production of maladies by the discovery of their poison, which Dr. Lindsay accomplished in regard to cholera, is one of the best means to settle questions relating to the origin of disease, and by careful experiment, much is to be accomplished which has ever been regarded as obscure, and circumstances are reconciled, which, on a superficial observation, have been regarded as contradictory.

I may be permitted here to quote the concluding sentences of Dr. Richardson's paper. He says—

"1. That by experiment it might be proved, in what excreta of an affected animal the poisons of certain specific epidemics are located.

"2. By what surfaces of the body such poisons may be received, so as to excite their moribific effects.

"3. Whether the virus of a disease acts in the production of the phenomena of the disease, primarily or secondarily—*i. e.*, by its own reproduction and presence, or by the development of another agent.

"4. Whether the effect of climate, season, temperature, moisture, and the like, in their influence on the spread of epidemics, act by modifying the poison which excites the epidemic, or by modifying the condition of the individual who is exposed to the poison.

"While the solution of any one of the problems suggested above would be a fact of the time, the enquiries themselves lie open to the

veterinarian even more invitingly than to the physician. His opportunities are greater for such researches, and his increasing science is leading his mind each day nearer to the appreciation of their worth."

That Dr. Richardson, imbued, as much as any man I know, with a catholic spirit and keen appreciation of the value of knowledge, does not agree with Vegesius as to the relation of veterinary to human medicine, is proved by the last paragraph of the essay, so frequently referred to. He says,—

"Recognizing, as I do, the importance to medicine of every addition to veterinary science and art, and the fact that medicine human and medicine veterinarian is as distinctly *one* as the animal creation is *one*, I feel greatly honored in having the opportunity of introducing into this new literary work this brief and very incomplete paper."

Though too moderately estimating his contribution to our first Scotch veterinary periodical, Dr. Richardson has proved, by much more than that short article, how far and deep the veterinarian can, with great benefit to himself and direct benefit to others, dive into the mysterious workings of nature.

It is obvious that the subjects I have alluded to, as constituting fit objects for inquiry on the part of the veterinarian, may be regarded as purely medical, and the investigations strictly scientific. Every observation pertains to science, and, with a scientific turn, an individual cannot pass a day without remarking and reflecting on something new to him, if not absolutely new to the scientific world. For this reason alone, if no other existed, it is advisable that professional men should occupy positions which are calculated to offer facilities for observations of importance to mankind, and the appointment of medical officers of health, or surgeons and physicians to hospitals in which subjects for scientific investigation, as well as for the sake of humanity, are congregated, tends to give a very decided impetus to the study of sanitary matters, and to the progress of medicine.

Veterinarians are debarred from these privileges. They cannot be debarred for long, as their services are urgently required. In France, Germany, and elsewhere, civil appointments exist for veterinarians; and by a satisfactory system of inspection, epizootic and contagious diseases cannot exist long without due attention being paid to them, and measures, often adequate to check the disease, being adopted.

There veterinary surgeons hold also position as inspectors of slaughter-houses; and I can state from personal experience of the class of men appointed to these offices, that they become very acute observers of diseased conditions, and frequently prevent the sale of food unfit for consumption by man.

In considering, gentlemen, the relations of veterinary to social science, it is expedient that I should revert to the services which the public ought to expect from qualified men checking a dishonest trade in diseased animals. This is worse than all other dishonest trades, inasmuch as its effect is to ruin the health of many, though it more directly robs the poor of their means of sustenance, by selling innutritious, if not unwholesome food, and this at a price which, however small, must be exorbitant—the material being often worse than worthless.

It has been my lot to speak very openly on this subject, and incur the displeasure of those whose interest it is to keep up the trade. It was even sought by some to prove that I injured the farmers, though, in reality, none more than the agricultural community have an interest in the appointment of such inspectors, and this for various reasons:—

1st. The sale of a larger number of diseased animals tends to some extent to diminish the price of healthy stock. If the first were discarded, the second would necessarily, in any case, be raised in price.

2nd. Every carcase can be proved of far higher value than the dishonest flesher usually thinks fit to give. A very common price allowed is £1—occasionally much larger sums; but, as a general rule, the diseased animals would cover a great part of their first price as lean beasts, if turned to proper account. On this subject I hope on some early occasion, to speak at greater length, inasmuch as thousands of pounds are annually lost to farmers, either by the dishonorable trade in diseased beasts, or by the absurd mode of burying a dead animal, and not procuring from it the materials of great value, which are improvidently wasted.

3rd. Were well-educated veterinary surgeons to be appointed to slaughter-houses, they might in many cases, in passing an animal as wholesome which might have been supposed the reverse, check frauds which are rather common. As an instance of this, I may mention a case in which I was called in to condemn an ox for pleuro-pneumonia. I found him healthy, though suffering from slight temporary indisposition. Had I confirmed the opinion of the man who wished to condemn the beast, and said that the animal had the lung disease, it would have been sold at a great sacrifice.

Last. With the present system of meat inspection, diseases are entirely overlooked, or matters of minor importance are regarded as very serious. An organ might be condemned by the veterinary surgeon, whereas now the whole beast is destroyed, or *vice versa*. The agricultural community has, however, a direct interest that the veterinary profession should have the inexhaustible means of observation, to enlighten him on the diseases of stock, which can be furnished by no other means so readily as by the appointment of veterinary surgeons,

with salaries and authority suited to their stations as inspectors of slaughter-houses and dead-meat markets.

I have to suggest, however, that such officers should not be appointed by, and be the servants of town councils. With every respect for many worthy individuals serving the city in which they reside and their fellow-men, by accepting the honorary and resposible offices of town councillors, I unhesitatingly say that the authority for veterinary inspectors should come direct from Government, and, indeed, should in some way be connected with the Board of Health. This board, and the accomplished officers which are attached to the Registrar-General, can alone estimate the importance, and suitably judge questions which might arise in connection with the proper inspection of the animal food of man.

To show the occasional inconsistency and perversity of municipal authorities on these points, I have only to refer to the slaughter-house inspector in Edinburgh. I repeat, what I have often said before, that I do not wish to interfere with the honest and industrious men who serve this city to the best of their ability; but £23,000 were spent not long ago in building suitable slaughter-houses, which are very perfect in all their arrangements, and would enable a professional man, with comparatively little labor, to judge of far the largest quantity of the animal food consumed in this city. When the present very respectable, but non-professional inspector was appointed, Dr. Alexander judiciously proposed that a scientific man should hold that office. Doubtless some of his duties could not be performed by a scientific man, but the most important can only be attended to by a person well acquainted with pathological anatomy and the diseases of the lower animals. I regret to say that it was a member of our profession who chiefly opposed Dr. Alexander in his praiseworthy endeavors to obtain for the city of Edinburgh an efficient professional inspector.

(*Concluded in next number.*)

Pasturing Horses.—Few of the writers who have discoursed upon the management of horses have said anything about the summer grazing of these animals. Yet there are some points connected with it well worthy of consideration. Youatt says:

"The spring grass is the best physic that can be given to a horse. To a degree which no artificial aperient or diuretic can reach, it carries off every humor that may be lurking about the animal. It fines down the roundness of the legs, and, except there be some bony enlargement, restores them to their original form and strength. There is nothing so refreshing to their feet as the damp coldness of the grass into which they are turned, and nothing so calculated to remove every enlargement or sprain, as the gentle exercise the animal voluntarily takes while his legs are exposed to the process of evaporation that is taking place from the herbage on which he treads. The experience of ages has shown that it is the most skillful physic of veterinaries. It is the renovating process of nature when the art of man fails."

Worms in Horses.—The best remedy for worms in horses is to give a strong ball, composed of 6 to 7 drachms Barbadoes aloes, according to size, first preparing the horse with a few bran mashes. There can be no difficulty in giving the ball with a person accustomed to do so. A good remedy also is to give about a wineglassful of spirits of turpentine, mixed in a pint of warm water, and a pound of molasses or soft sugar.—*Rural Affairs.*

Transactions.

Meeting of the Board of Agriculture.

The Board met, in accordance with a call from the President, at the office in Toronto, on Thursday, December 27, 1860, at noon.

PRESENTATION TO PROFESSOR BUCKLAND.

It being the intention at this meeting to present to Professor Buckland, a testimonial, which had been sometime prepared, of the value placed upon his services during the period in which he was Secretary of the Agricultural Association and of the Board, a number of gentleman, in addition to the members of the Board, were present by invitation for the occasion.

The meeting having been called to order, the President proceeded to read the following address:—

"*Professor George Buckland, lately Secre- of the Board of Agriculture of Upper Canada.*

"Sir,—Your long connection with the Board of Agriculture as its Secretary, and the zeal and ability you have at all times exhibited in the discharge of the duties connected with that office, your courtesy and suavity of manner, as well as the earnest desire you have ever evinced to promote the agricultural interests of our country, determined the Board, at the time of your appointment to the important office of Resident Dean of Toronto University, and your consequent resignation of the Secretaryship of this Board, to present to you some tangible testimonial of the high estimate they entertained of your services, while connected with

them in the important position of their Secretary.

"The presentation of this testimonial has from several causes been delayed much longer than we anticipated, and it is only now that we have it in our power to carry out our design.

"We now request your acceptance of, and we are quite sure that we have the approbation of all our agricultural friends in tendering to you, this slight testimonial of our and their esteem.

"As President of the Board, I can say that I have never been called upon to perform a more pleasing duty than that which I now discharge in the name and on the part of the Board of Agriculture of Upper Canada."

To which Professor Buckland replied as follows:—

"*Col. Thomson and Gentlemen of the Board of Agriculture of Upper Canada.*

"In accepting this testimonial as a gratifying mark of your respect and confidence, and appreciating its intrinsic value, I desire to express how deeply I feel the force of those moral and social relations, of which it may be regarded as an exponent.

"It is now a little more than thirteen years since I came to this country, and during the whole of that period it has fallen to my lot, in common with a number of friends whom I now see around me, to devise and carry into execution such measures as seemed best conducive to the advancement of the agriculture of this country. For some time our progress was slow, and numerous difficulties had to be surmounted. I well remember being present at the Second Annual Exhibition of the Provincial Association at Hamilton, in 1847, and the impediments in the way of subsequent progress, which seemed for a while to preclude any but the slenderest hopes that the institution would be matured and attain to a permanent standing. By perseverance and united effort the prospects of the Association graduolly brightened; its exhibitions yearly increased, both in the amount of material and in the confidence and good will of the public. And since the establishment of this Board by Parliamentary Statute, with a liberal support from Government to Agricultural Societies, great, if not rapid improvements have been effected in the various breeds of live-stock, in agricultural implements and machines, and as a consequence, in the general cultivation of the soil, and the raising of farm crops.

"It will be found by observation that these improvements have been apparent in the increased efficiency of Agricultural Societies generally, and of the Provincial Exhibition in particular, which now takes rank with the foremost of its class on this continent, and, from what I recently observed of the working of similar organizations in Europe, it does not occupy, even when compared with them, an inferior position. Indeed, while observing in countries of the Old World, the results of their labors and mechanical skill in this ancient and most important of arts, I felt deeply struck with the rapid progress made in Canada, during the past few years; the whole of this great western section being almost an unbroken wilderness, half a century ago! I allude to these facts, not with a view to induce us to rest on our oars, but rather as incentives to yet greater exertions for the future.

"That my humble services should be considered as having, in any measure, contributed to the attainment of these results, will form a source of satisfaction and pleasure as long as I live, and stimulate me for the future, to do every thing in my power, to promote the welfare and happiness of my adopted country.

"I feel in this connection, it is only a simple act of justice to observe, that during the now rather long period in which I have been officially connected with this Board, and the Provincial Association, I have uniformly received from all my coadjutors, a kindly and courteous consideration, and a prompt co-operation in prosecuting the great objects for which we are associated; a circumstance that I shall always remember with feelings of gratitude and pleasure.

"Did the acceptance of this handsome Testimonial involve the severance of the link connecting me with the Board of Agrieulture, and a large circle of esteemed friends engaged in the patriotic work of agricultural improvement throughout the Province, my feelings on this occasion would be of a very different character to those which now animate my breast. I still have the pleasure of continuing among you, as a member of this Board. And in my new position in our Provincial seat of learning, I shall enjoy opportunities of aiding the important work of agricultural

education, and of promoting the great objects which it is the function of this Board to foster and secure. It is my intention to spend the greatest part of the summer vacation in visiting the Agricultural Societies of the Province, with a view of obtaining and imparting information.

"If Providence should extend my days beyond the ordinary period of active exertion, this handsome gift will continue to serve as a pleasing momento of past scenes and duties, and old cherished friends; and it will, I trust, descend as an heir-loom in my family, and serve to remind those who come after, that to enjoy the confidence and sympathy of their associates, they must act in a manner to deserve them.

"Permit me, Mr. President, in conclusion, to observe, that I feel peculiar pleasure in receiving this Testimonial at the hands of a Canadian farmer; one who has devoted a long and consistent life in promoting the agriculture and common good of his native land. And may that land, under the guidance of a beneficent Providence, continue to enjoy through all succeeding generations, the priceless blessings of British freedom, and the cheering light and immortal hopes of our common christianity!

The testimonial consisted of a silver pitcher and two drinking goblets, of handsome design and workmanship, and manufactured by Mr. W. Morrison, of Toronto.

On one side the pitcher bears the following inscription:—"Presented by the Board of Agriculture of Upper Canada to George Bfickland, Esq., Professor of Agriculture in the University College, Toronto, as a slight testimonial of his long and valued services as Secretary of the Board and of the Agricultural Association, Sep. 1859." Underneath are two cornucopiæ, proceeding from which and forming a scroll around the inscription are ears of wheat, a scythe, rake, fork, &c., all beautifully worked and artistically grouped. On the opposite side of the jug, within a similar scroll, is the rural scene of a farmer plowing; and in front are the arms of the Association. The base is formed of a sheaf of wheat, leaning against which are various agricultural implements, such as a spade, scythe, hoe, rake and fork. The handle represents the branch of a tree deprived of its limbs, and is enriched with maple leaves in frosted silver. The goblets bear the inscription—"Presented to Professor Buckland by the Board of Agriculture, 1859," and are neatly chased and engraved with fancy scroll work.

The Board then proceeded to regular business.

Present: E.W.Thomson, President; Hon. G. Alexander, A. A. Burnham, Hon. H. Ruttan, R. L. Denison, Hon. D. Christie, Professor Buckland, J. Wade, Dr. Beatty, J. E. Pell.

The President in the chair.

The minutes of previous meeting were read and approved.

The following letters and communications were submitted by the Secretary:—

From Mr. W. Ferguson, of Kingston, regretting his inability to attend the meeting.

From Mr. E. Garratt, of London, Provisional Chairman of the Local Committee for the Exhibition of 1861, recommending the names of certain persons to be placed upon the Committee.

From R. T. Pennefather, Esq., Secretary to His Excellency the Governor General, informing the Board that His Royal Highness the Prince of Wales had been pleased to place at the disposal of the Board the sum of Two hundred pounds, to be applied in the distribution of prizes, as shown by the following extract from a letter to Sir E. Head from His Grace the Duke of Newcastle:

"The sum of £200 to be placed at the disposal of each of the two Agricultural Associations of Upper and Lower Canada, to be applied by the Directors of those Societies he distribution of prizes in such way as may appear, after due consideration, best calculated to promote the important objects for which the Associations were formed."

Fom Mr. Fearman, of Hamilton, asking payment for certain articles lost at the late exhibition.

The Treasurer submitted his Report and balance sheet, with the report of the Auditors, showing, that for the financial year, terminating 18th September, 1860, including a balance of $8,028 85 from the previous audit, the sum of $51,718 65 had been received, and the sum of $46,238 18 had been paid, leaving a balance in the hands of the Treasurer of $5,480 47.

The Secretary laid upon the table the various publications which had been presented to the Board since the last meeting, consist

ing of the Transactions of the California State Agricultural Society for 1858; the Transactions of New York State Agricultural Society for 1859, several copies; the Transactions of Illinois State Society 1853 to 1859, 3 volumes; Transactions of Ohio State Society to 1859, inclusive, eleven volumes, accompanied by a number of other interesting Reports and Documents; Memoirs of the Literary and Philosophical Society of Manchester, England; Report of the Bath and West of England Agricultural Society, and several other works.

The thanks of the Board were voted to the various institutions which had forwarded their publications.

Resolved,—That the list of names submitted from London, to compose the Local Committee for preparing for the next Provincial Show, be approved, with the understanding that such Local Committee hand over to this Board the Grounds and Buildings complete at least ten days prior to the commencement of the Show, in accordance with the guarantee of the City of London.

Resolved,—That the next Exhibition be held on the 24th, 25th, 26th, and 27th September, 1861.

Resolved,—That the Board desire to express their grateful thanks to His Royal Highness the Prince of Wales for his munificent gift of £200 to the Association; that the money be permanently invested, and that the annual income derived therefrom be awarded as a prize at each successive Provincial Exhibition, to be called the Prince of Wales Prize, and to be given for such objects as may from time to time be deemed suitable and advantageous by the Board.

The Treasurer's Report was then taken into consideration and adopted.

Resolved,—That the thanks of the Board be given to the Auditors for their valuable services in auditing the accounts of the Association, and that they be paid the sum of twenty dollars each for each year.

Resolved,—That in future the accounts of receipts and expenditure shall be made up for the natural year, and that the accounts for this year, and for each future year, shall be closed on the 31st December, and audited with all convenient speed.

Resolved,—That the President, Professor Buckland, Mr. Christie, Mr. Denison, and the President of the Board of Arts, be a Committee to consider and report to the Board at the next meeting, if any amendments are necessary to the Agricultural Act.

The Secretary stated that from certain unavoidable delays the reports which had been sent in by Agricultural Societies last summer in competition for the prizes then offered had not yet been examined and reported upon. As the reports were numerous and bulky, it was a work requiring considerable labor and time to examine them all carefully.

On motion a special Committee was appointed to examine the reports and report upon them.

After some further business relating to matters of detail, the Board adjourned.

Editorial Notices, &c.

Visit to Woodhill.—We had the pleasure of spending a day last week with the Hon. Adam Fergusson, of Woodhill, and of inspecting his herd of cattle. Since our last visit Mr. Fergusson has finished the improvements of his stables, byres, &c., which are now very warm and convenient, having thick walls of stone, with proper attention to ventilation; a matter too frequently neglected. Mr. F. still keeps up a small herd of pure shorthorns, and has several young animals of great promise. Among them we noticed several grades, possessing excellent points both in form and quality, clearly indicating the great advantages of crossing our best native cows with a shorthorn bull. The young shorthorn bull, *Garibaldi*, purchased from Mr. Wm. Miller of Pickering, is a large, fine animal, for his age, and promises well. This herd is kept in the ordinary way, carefully tended, but not at all pampered. The management is creditable to the farm bailiff—an intelligent Scotchman. We were glad to find Mr. Fergusson's health steadily improving, and hope shortly to see him again resuming his active and public duties. He continues as ever a zealous admirer and promoter of agricultural improvements, and as warmly attached to shorthorn cattle.

The Journal of the Board of Arts and Manufactures for Upper Canada: No. 1, January, 1861:

We hail with pleasure the advent of a new fellow laborer in the wide field of Canadian indus-

try. The Board of Arts and Manufactures for this section of the Province, which was established by statute some three years since, have, we think, wisely determined on issuing a monthly journal, the first number of which lies before us, and which is alike creditable to the editor, and the Board, of whose objects and proceedings it is the official exponent. The introductory article lucidly sets forth the objects which the Board seek to promote, and the interests which it is their duty to foster. The Board has determined on holding annual examinations for such members of incorporated Mechanics' Institutes as may desire to distinguish themselves in the various walks of useful learning, to whom certificates will be granted. The present number of the Journal contains full particulars of the subjects, text books, &c. We look upon this feature of the Board's proceeding as possessing great interest and importance, and its promoters must not be discouraged if it should progress but slowly. It took many years in England, before a similar plan became general and efficient in its working. Among the various useful subjects included in these examinations, we wish our readers to notice, are agriculture and horticulture

As the Board of Arts and Manufactures is incorporated under the same Act of Parliament with the Board of Agriculture, and both to some extent have duties to perform in common, we regard with no common interest the success of this new and important undertaking. Agriculture, commerce, and manufactures should go hand in hand together; and the success of the two latter, must in this, as it has done in all other countries, beneficially affect the interests of the former.

The Journal will be published on the first of every month, at $1 per annum for single copies, or to clubs of ten or more at 75 cents per copy; and to members of Mechanics' Institutes, for 50 cents per annum per copy. Communications whether for the Journal or the Board, should be addressed to the Secretary, W. Edwards, Esq. at the Board Rooms, 79 King Street, Toronto.

Blackwood's Magazine, for December; New York: L. Scott & Co.; Toronto: H. Rowsell.

This number completes the 88th half yearly volume of this world renowned Magazine; and is, as usual, filled with articles of sterling merit, on some of the most important topics of the day. The one on the Theories of Food will be found universally interesting, and others, such as Iron-clad Ships of War, A Visit to the Tribes of the Ryhanler Turkmans, Our only Danger in India, and Social Science, will be found equally so. We have in late numbers pointed out the excellency and marvellous cheapness of these reprints of the standard British Periodicals, and the present is a peculiarly fitting time for new subscribers to commence. Blackwood, with the four leading Quarterly Reviews, can be obtained for only $10 per annum! Each is also sold separately.

Transactions Illinois State Agricultural Society.—We are indebted to Mr. J. P. Reynolds, Corresponding Secretary of the Illinois State Agricultural Society, for the Report of the proceedings of that Society for the years 1853 to 1859 inclusive, in three handsome volumes, and containing much interesting and valuable information.

Ohio State Agricultural Society.—Mr. J. H. Klippart, Corresponding Secretary of the Ohio State Board of Agriculture, has favored us with a parcel containing the following valuable works:—Reports of the Ohio State Board of Agriculture for the years 1847, 1848, 1850, 1852, 53, '54, '55, '56, '57, '58, '59, eleven volumes; Third Annual Report of the Oommissioner of Statistics to the Governor of the State of Ohio. 1859; Proceedings of the State Board of Equalization, 1859-60; Report on the State House Artesian Well at Columbus; Annual Report of the Auditor of the State, 1859; Sixth Annual Report of the Superintendent of Hamilton County Lunatic Asylum; Amended By-Laws, Rules and Regulations for the State Reform Farm, near Lancaster, Ohio; Report of the Commissioners appointed by the Governor of Ohio to investigate the Massachusetts Cattle Disease, Pleuro-Pneumonia, together with several other reports and pamphlets, for all of which we have to return our hearty thanks, and we shall endeavor to make our readers better acquainted with the contents of some of the works at an early day.

Dewey's Fruits, Flowers, and Ornamental Trees.—We have to apologize for having omitted for a long time to notice some handsome colored plates of Fruits received from Mr. D. M. Dewey, Arcade Hall, Rochester, including Early Strawberry Apple, Belle Lucrative Pear, Trollope's Victoria Strawberry, Concord Grape. These plates are well executed and richly coloured. They are particularly useful to nursery men,

or agents selling fruit trees, as they are taken from nature by the best artists, and represent accurately the kinds of fruit named. They also form a handsome ornament for an office or parlour. They may be had singly or in books, bound to order. The price of colored plates of fruits and evergreeds, 25 cents each; of grapes, flowers, and shrubs, 37½ cents each.

The Agriculturist for 1861.

The *Agriculturist* is published semi-monthly, each number consisting of 32 pages, and forming a volume of 768 pages.

The *Agriculturist* is exclusively devoted to Agriculture, Horticulture, and similar subjects. It is the cheapest paper of the kind in North America, and specially adapted to the circumstances of the soil and climate of Canada.

The *Agriculturist* is Post Free.

The terms of subscription are: Half a dollar per annum for single copies; Eleven copies for Five Dollars; Twenty-two copies for Ten Dollars; Thirty-three copies for Fifteen Dollars, &c. Payment always in advance.

CASH PREMIUMS.

As a further reduction in price on the largest orders, the following money premiums will be paid on copies ordered and paid for prior to or on 1st April next, viz:—

To the officer of any Agricultural Society, member of a club, or other person who shall send in the largest list of subscribers, accompanied with the cash, on or before the 1st April next, a money prize will be paid of..	$20
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The Agriculturist for 1st January.

We shall send this number only to our exchanges, officers of Agricultural Societies, those who remitted payment for more numbers than we were able to supply last year, and who have consequently a balance in their favor, and to those who have already favored us with their orders for this year. Our readers will please bear in mind that it is our practice to discontinue mailing the *Agriculturist* as soon as the term for which subscriptions have been forwarded has expired.

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

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Feeding of Stock as a branch of Farm Management.

There is no department of the economy of the farm more important than that which relates to the feeding and management of the domesticated animals, and there is none, perhaps, in this country, so little understood, or practically regarded. Of late years, since the introduction of pure and expensive breeds, more attention has been paid to this subject, and here and there may be found farm buildings in connection with a system of management adapted to the requirements of the present advanced state of knowledge, and recent improvements in these matters.

An able paper on this subject appeared about a year since in the *Highland Society's Journal*, by Professor Anderson, from which we make the following abridged divisions :—

Properties of Food.—Practically, the problem which the feeder has to solve is, how to supply his cattle with such food, and in such quantities as to insure the largest amount of increase with the smallest possible loss. And for this purpose it is necessary, not merely to select the largest quantity of nutritive matters, but to attend to the proportions in which they are mixed, and to restrain as far as possible all those functions which are productive of waste.

All the different kinds of food consumed by herbivorous animals are found to present a general similarity in composition. They are composed of a nutritive and an indigestible part; the latter consisting generally of woody fibre, which appears to be quite incapable of assimilation. It is most abundant in the herbaceous parts of plants, as in the straw of the cereals and the stems of the grasses, and is almost entirely absent in the grains when deprived of their outer husks, as, for instance, in wheat flour. The nutritive part always consists of a mixture, in very variable proportions, of several substances, which may be separated by different chemical processes. However much the relative quantities may vary, every food is found to contain at least three different substances, which are members of the three great classes into which the nutritive constituents of food may be divided, and which have received the names of the nitrogenous or albuminous, the saccharine or starchy, and the oily substances.

These classes of food constituents perform two different functions. The nitrogenous matters are employed to counter-balance the waste of the tissues, and to increase the quantities of lean flesh or muscle; and hence have been called the flesh forming substances. The fatty and saccharine compounds, on the other hand, serve to maintain the process of respiration, and the animal heat, and for this reason have received the name of the respiratory or heat-producing elements. They supply also the fatty matters stored up in the body, which form a very large proportion of the weight of the animal.

It is sufficiently obvious that, as the two great functions of nutrition and respiration must pro-

ceed simultaneously, the best and most economical food will be, first, that which contains its constituents in the most readily assimilable form; and, secondly, that which contains them mixed together in the most suitable proportions.

The importance of a proper balance between the relative quantities of the two great classes of nutritive constituents must also be sufficiently obvious. If, for instance, an animal be supplied with food containing a large quantity of nitrogenous and a deficiency of heat-producing compounds, the result must be, either that it languishes for want of the latter, or it is forced to supply the defect by the increased consumption of food; in doing which it must take into its system a much larger amount of nitrogenous matters than are requisite for supplying the waste of the tissues; and thus there is an unnecessary and wasteful expenditure of these substances.

The proper adjustment of the relative proportions of nitrogenous and non-nitrogenous food is the foundation of successful feeding, and its importance has of late years been fully recognised by chemists.

Importance of Warmth, Cleanliness, and Ventilation.—The other great source of loss of food is the maintenance of the animal heat, which is a matter in this extreme climate of the highest consideration. It has been well observed that an animal may, in certain respects, be compared to a furnace, in which a quantity of fuel is burned to produce the animal heat. It may, in fact, be stated as a general rule, that the warmer cattle can be kept the more rapidly will they fatten, all other circumstances being alike. The cleanliness and proper ventilation of the houses should be attended to, and the state of the dung observed, care being taken that the excretions are regular, and every tendency to scouring, or the reverse, immediately corrected.

Importance of Bulk in Food.—Although the presence of a sufficient quantity of nutritive matter in the food is naturally the most fundamental matter for consideration, its bulk is scarcely less important. The function of digestion requires that the food shall properly fill the stomach; and however large the supply of nutritive matters may be, their effect is imperfectly brought out if the food be too small in bulk; and it actually becomes more valuable if diluted with woody fibre, or some other inert substance. On the other hand, if a food be too bulky, the sense of repletion causes the animal to cease eating long before it has obtained a sufficient supply of nutritive matter. It is most necessary, therefore, to study the bulk of the food, and to consider how to mix different substances in such a manner as to adjust the proportions of nutritive matter to their bulk.

Farm Crops; how best and most economically used as Food.—These crops are ha straw, turnips, mangold, peas, potatoes, &c., and they include those most remarkable for their bulky nature; the turnip, for instance, containing less than 8 per cent. of nutritive matters. All of them are also remarkably deficient in fatty matters; the bean, which is much richer than any of the others, rarely containing so much as 5 per cent. The result of all feeding experiments leads to the conclusion, that animals cannot be brought to the highest degree of fatness upon turnips, or even on hay, alone.

A peculiarly interesting series of experiments by Wolff have shown that sheep, which, when fed on hay of average quality, attain a weight of about 90 lb., will gain an additional 10 lb., if rape cake, or some other food containing a large quantity of nutriment, be given them. As a general rule, such substances as oil-cake, rape-cake, corn meal, &c., greatly promote the fattening process, and they operate partly by supplying a larger quantity of nutritive matters within the bulk which the stomach requires, and partly by increasing the supply of nitrogenous matters, in which they are particularly rich.

Proportions of Flesh and Heat-producing Elements in Food.—All, however, depends upon the *ratio* of flesh and heat-producing elements being the right one; and it would appear that this proportion differs according to the object of the feeding. Wolff, who has directed much attention to this subject, states, as the result of his experiments, that for maintaining animals at a moderate weight they should be as 1 to 8, for young cattle as 1 to 7, and for fattening as 1 to 5 or 6. He found by actual experiment that the production of milk was largest when the

two classes were in the ratio of 1 to 7; but his conclusions with regard to fat cattle must be taken with some reservation. The most important point which he has brought out, is the very high value of *Rape-cake*; and it is interesting to know that in this respect his results bear out the repeated recommendations which chemists have given of that substance. He has shown that 1 lb. of rape-cake will produce 1 lb. of milk, and, under favorable circumstances, still more; and its effect was better than that of an equal weight of grain. It appears, also, that in feeding it is equivalent to more than twice its own weight of hay. The great difficulty which is encountered in the use of rape-cake is that cattle dislike its taste; and if they are supplied with a full quantity of turnips or straw, they will consume just a sufficient quantity of these foods to maintain an average weight, and reject the rape-cake offered them. The way in which this is to be obviated is said to be quite simple. Of course it will not do to diminish the quantity of other nutriment given to the cattle, for that would defeat the objects of the feeder. But a part of the more bulky food, such as turnips, must be replaced by some substance, such as grain, containing the same amount of nutriment in a smaller bulk; and then the craving for a sufficient quantity to fill the stomach will induce the animals to consume the rape, and after a few days they will become accustomed to the taste. Both rape and flax are readily grown in Canada, and our farmers would do well to avail themselves more largely of these valuable substances for feeding purposes.

The Profit of Feeding.

For the Agriculturist.

It is evident that this consists in a valuable return from the animal of the food consumed. In the horse, this can only be received in labor or breeding; in the ox, from labor and flesh; in the cow, from the milk, the flesh, and her young; in the sheep, it may be returned in its fleece, its carcass, or its progeny, and the swine only by its progeny and flesh. The manure we expect from all, and if this be not secured and judiciously used, few animals about the farm will be found to yield a satisfactory profit for their food and attention, though it is evident it should form but a small part of the return looked for.

Animals are only profitable to the farmer, when they yield a daily income, as in their milk or labor, or annually, by their young or fleeces, unless it be in a course of regular improvement, either in their ordinary growth, or preparation for the butcher. The animal must consume a certain amount of food merely to keep up its stationary condition, and to supply the materials for waste, respiration, perspiration, and the evacuations. These must be provided for in all cases, before the farmer can expect anything for the food.

Frequent observations have shown that an ox will consume about two per cent. of his weight of hay per day to maintain his condition. If put to moderate labor, an increase of this quantity to three per cent. will enable him to perform his work, and still maintain his flesh. If to be fatted, he requires about four and a half per cent. of his weight, daily, in nutritious food. A cow to remain stationary, and give no milk, eats two per cent. of her weight daily; and, if in milk, she will consume three per cent. If these statements are correct, which it is certain they are in principle, though they may not be entirely in degree, it will require the same food to keep three yoke of cattle in idleness, as two at work; and the food of every two that are idle, will nearly support one under the most rapid condition of fatting. Two cows may be kept in milk with the same feed that will keep three without.

No practice is more impolitic, than barely to sustain the stock through the winter, or a part of the year, as is the case in too many instances, and allow them to improve, only when turned on grass in summer. Besides subjecting them to the risk of disease, consequent upon this privation of food, nearly half the year is lost in their use, or in maturing them for profitable disposal; when, if one-third of the stock had been sold, the remainder would have been kept in a rapidly improving condition, and at three years of age they would probably be of equal value, as otherwise at five or six. It is true that breed has much to do with this rapid improvement, but breed is useless without food to develop and mature it.

Ancaster, January, 1861. W. A. C.

An American Farmer's Visit to Canada.

[We copy from the *Rural New Yorker* the following letter from Mr. John Johnston, an extensive farmer near Geneva, who has particularly distinguished himself, by a thorough and efficient system of draining his land, and other agricultural improvements. Such a man's candid opinion of our agricultural doings in Canada is worth a permanent record in our columns, and deserves the best attention of our people. We

are not surprised that Mr. Johnston should have so highly admired the splendid long wool sheep from the flocks of Messrs. Guy & Jeffrey.—Eds.]

Mr. Moore:—I have recently been in Canada in the towns of Whitby, Pickering, and Darlington, and I think these towns the garden of the portion of Canada I have visited. The land is excellent and highly cultivated; buildings good, equal to any farming district I have ever passed through, with the exception of those near large cities, and their highways are as good as any I ever travelled. I was quite surprised to see such roads and buildings, especially when I know that thirty years ago, and perhaps less, that whole district was a wilderness. The timber was principally beech and maple, yet the stumps are all gone, and the country looks as old as around Geneva.

I attended the Agricultural Show at Whitby the first day, when the grain, roots, implements, and ladies' work were exhibited. The roots were the best I have seen; the carrots and turnips very large. The grain was also very fine. The white wheat (Soule's) I think could not be excelled in any country. The spring wheat shown was good, but I saw better spring wheat in Canada last year. The peas and oats were very good. I am sorry that we cannot raise peas like the Canadians. I think our oats as good.

The Ladies' work was beautiful, but I am no judge of such articles. There were some fine portraits and other paintings exhibited in the same hall, and what I thought a fine toned piano was kept in use all the time I was there.

The Mechanical productions (farm implements, &c.,) were also exhibited the first day. Some of those long 250 lb. ploughs were there, but the farmers are beginning to find out that what they call Yankee ploughs are better than the long, heavy ones which they have held on to so long, without ever reasoning on the subject. Many are now throwing them aside, and using the Yankee plough they so long held in *derision*, or at least imitation Yankee ploughs manufactured at Oshawa. There were two kinds shown; some with cast-iron beams, similar to ours; then there were steel ploughs with wooden beams, similar to those made by Messrs. Remingtons, Markham & Co., of this State, but not near so good a plough, in my opinion, and I believe the latter would sell better if introduced there than those made in Oshawa. The manufacturers at Oshawa might do well to have a plough from Ilion as a pattern. Although there is $3 duty on each plough, I have no doubt Messrs. R., M. & Co., could under-sell the Oshawa manufacturers, or at least they could sell a better article at the same price. Their cast-iron beam ploughs appeared to me to be equal to any of ours, and for some purposes better. I thought well of the cultivators shown. The iron ones were new to me, and I do think must answer the *purpose* they are made for, better than any I ever saw. There were two kinds of harrows shown; one a rotating, on a new principle; the other was an improvement on the common double harrow, which I think good. There were different kinds of cutting boxes; those I never pay much attention to. I don't see what use cattle have for teeth if their fodder has to be cut for them.

The second day the stock were shown. The Horses, or at least part of them, were of immense size—I thought altogether too heavy for farm work—but they were noble looking animals. One black and a gray were beautiful animals of their kind, but I thought them too large. There was also a very good show of Durham Cattle. A Mr. Thompson showed some very good, and a large number. There were others that showed very good Durhams. There were also some very good fat cattle shown. A five year old Devon heifer (imported,) was very fine and very fat, although I believe she only got the second premium, a Durham heifer of same age being fatter on the rib. They were both superior.

But the sheep excelled all. They were in great numbers, and for fat and size I question if they could be surpassed anywhere. Mr. Wm. Jeffrey had some very fine. A Mr. Guy had also some that were very good. But they were all good—not a bad lot among them. I examined Mr. Jeffrey's and Mr. Guy's on their farms, and really I think there can be no further improvement made on them. Mr. Jeffrey's are pure Leicester,—Mr. Guy's have some cross of the Cotswold, at least a portion of them. Mr. Guy has also some pure Cheviots. It was forty years since I had seen any of them. They were fat and fine, and I think pure bred; but the Leicesters and Cotswolds are so much larger, they will always be the best favourites in Canada, although I think a cross with the Cheviot might give them more hardiness and also improve the mutton. At Mr. Guy's I saw his buck that took the first premium at Kingston, for three year olds, last year. He then weighed 352 lbs. He is now so enormously fat that it is with great difficulty he can rise. I never saw his equal. It is worth a journey to Canada to see him.

I was delighted with the sheep I saw at the show and on Mr. Jeffrey's and Mr. Guy's farms. There was a pair of fat ewes shown that took the first premium; said to weigh, together, 480 lbs. There were as broad in the back as a good Durham cow. The Canadian farmers can make wonderful sheep. Mr. Jeffrey had photographs token of some of his bucks, but they were not so good as the originals.

The wheat crop in that section has been excellent this season. Their spring wheat was a very large crop, but I did not think the quality very good. They can raise but little winter

wheat near the lake (Ontario.) The midge ruins it there, but from twenty to forty miles back, they raise excellent white wheat. I heard of one fine field of five acres in the township of Scott, that gave 52 10-60 bushels per acre. The field was summer fallowed, and the neighbours said the owner kept ploughing it from spring until seeding time, manured it, and put a large quantity of ashes on it; but they acknowledged it paid him after all. That was a larger crop than I ever saw. I brought samples of the best white winter wheat found, but it is no better than some here, although it was said to produce more to the acre. I think if they would sow from 200 to 300 lbs. of salt to the acre on their spring wheat, it would improve the quality very much. The straw, although not rusted, is of a dull dark color; and when such is the case, the quality of the wheat is never first-rate. I advised a gentleman last year, who lives north of Rice Lake, to try salt. I saw his foreman this year; he told me they salted part of their spring wheat, and it was better by far than that not salted.

Yours, &c., JOHN JOHNSTON.

Near Geneva, N. Y., 1860.

Sheep in Connection with Wheat Growing.

In a recent number of the *Journal of the New York Agricultural Society*, Gen. Rawson Harmon, of Wheatland, N.Y., gives the following account of his practice with sheep in connection with clover and wheat growing, so as to keep up the fertility of the soil. Much of the land in Canada, as well as in the States, has been deteriorated by too frequent cropping with wheat, and both time and experience will be required to restore it to its former state of fertility. Wheat, clover, and sheep are admirably adapted to go together, and sustain the productiveness of the soil. On light lands, suitable for wheat, such as the oak plains, in the County of Brant, sheep are found to be a necessary adjunct in arable culture, as the practice of Hon. David Christie, Mr. Moyle, and others, clearly shows.

The following practical remarks we commend to the attention of our wheat growing farmers, who have a soil and situation adapted to clover and sheep:—

"For many years we have kept two sheep to the acre of wheat land; say for one hundred and fifty acres, three hundred sheep may be kept, and the regular rotation of the wheat and clover kept up on the one hundred and fifty acres, forty of which should be in wheat each year, and ten in corn and roots. Clover seed should be sown in March or April, six quarts to the acre, and as soon as the ground is dry in the spring, one bushel of plaster should be sown to the acre.—Barley or oats should follow corn and roots, and seeded as above; so we have fifty acres seeded with clover each year, ten acres in corn and roots, leaving ninety acres for pasturing and mowing. A team is to be kept for the work on the farm, and three or four cows, for the use of the family; and no other stock should be kept, except hogs, for the family use, and they should be limited, for mutton is cheaper and more wholesome meat than pork. The above, for the use of the family, is all the stock that should be kept on a wheat growing farm, except sheep; and with the above amount of land, three hundred sheep may be kept, and well cared for.—They should be kept at the barn till the first of May, when they should be turned on to the fields which the corn and root crops are to occupy, and where the wheat is to be sown, remaining till the clover in the pastures is half grown; then give the sheep a chance at that, which will keep them till the clover commences heading out where the wheat and barley has been harvested. One great cause of failure in sheep husbandry is in letting the sheep run on the pastures long after clover has done growing, and in the spring before it commences growing, when there is no tallow in the clover, and it is gnawed into the ground, and much of it destroyed.

For winter management most farmers fail, in giving the sheep too much run. Where they are stabled, or kept in close sheds and not suffered to run at large, from November till May, one-fourth of the food can be saved, the flock kept in better condition, giving one-fourth more wool, and making twice the amount of the most valuable manure made on the farm. From fifty to one hundred are to be kept in a flock. Sheep of about the same weight should be kept together; where lambs or yearlings are suffered to run with full grown sheep they will will not do as well. Lambs should be taken from the ewes about the 20th of August, if dropped in the month of May, and a few yearlings put with them, and they will be more easily controlled, and by the 20th of September they should be fed moderately with oats or bran and a little salt every day, so that by the time they come to the barn they are tame and in good condition for wintering. The first clover in the barley field would be a favourable field for lambs. The corn, roots, and barley, should be wholly fed out on the farm; and, with the straw, cornstalks, and hay, all may be well supplied from November till May, except the team, which it may be well to keep in the stable when not at work. All the manure made each year should be applied to the corn and root field. Wethers, three past, and ewes that begin to lose their teeth, should be put in one yard, and grained through the

winter, and then they will be fit for the butcher, and will pay for the food they have consumed; and they must be disposed of, so as to give place for the increase. No sheep should be sold from the farm till they have come to full maturity.—The selling of lambs to the butchers, is ruinous to a flock—or letting butchers go in and take the best of the flock. Old sheep, as well as lambs, should have some grain or roots every day while at the barn. Sheep will pay much better for the grain they eat than the man you sell to will.—No animal kept on the farm pays better than the sheep—for their rapid increase, with their fleece and meat, give a better return for what they consume than any stock kept on a grain farm."

Land Drainage.

At the recent annual meeting of the East Zorra Agricultusal Society, John Dunlop, Esq., of Woodstock, read a useful and practical Essay on Drainage, which we insert, slightly abridged, as follows:

In twenty years practical experience of agriculture and drainage operations, I am convinced that all the low, damp land of this township, at present growing aquatic or other plants utterly worthless to the husbandman, and considered by many, as not worth cultivating, will after undergoing the operation of under-drainage, deep ploughing, and good cultivation, prove to be the most valuable lands in the township, as they at present contain an immense amount of vegetable matter that only waits to be assimilated into the bulk of cereal and root crops by draining the soil thoroughly.

Before under-draining came into operation, the most primative mode, I believe, was to form the land into ridges and furrows, the width of these varying from 10 to 30 feet, but the general average being about 16 feet; these ridges being well raised up in the centre, thus forming a deep track on each side to carry off the surface water. When the land was in crop, the yield at the furrows was very small, owing to the dampness of the soil at that spot; under-draining was then tried as an experiment, and found to succeed admirably.

Before the introduction of tiles, I used to a considerable extent broken stones for draining—the main or receiving drains having a hand-built conductor formed of the dry material, with the addition of a few inches of small stones placed above the conductor. The lateral drains were filled to the height of about twelve inches, with stones (broken small,) a little straw, or perhaps the sod, was placed above to prevent the fine soil from getting among the stones, preparatory to filling up the drain. These drains were generally cut to the depth of 20 to 24 inches, and the distance between each drain varied from 16 to 24 feet, according to circumstances.

These drains acted very well for several years; but in many cases the fine soil got down among the stones, and filled up the drain, especially in fine light soil.

I have also tried to drain with the small branches of trees, cut into lengths of about 12 inches, and made up into small bundles, tied together with tared twine. These faggots were placed in the drain in a sloping direction, pressed well together, and covered over with the sod before filling in the earth. These faggots, if made of durable wood, will last several years, and are very cheaply manufactured. I saw one of these drains opened after having kept clear for 12 years, it was quite good, but too shallow. The material used for faggots was the white hawthorn.

About 15 years ago I tried lumber boards nailed together, so as to form a conductor for the water. This was on a small enclosure of about five acres, the soil a black loam and very wet. The drains acted well and are still in good working order, but the high price of lumber in Scotland made this sort of draining too expensive.

On strong clay and pretty free from stones, I have drained a good deal; and used the sod or turf, got from the upper surface of the drain track. These drains were opened to the depth of 3 feet and cut in the form of a wedge. The sod was cut by a tool made for the purpose, and was rammed down quite firm, before being covered up. This is a very cheap mode of draining, when the soil is suitable, as they will work well for ten or twelve years if properly built. I used to pay for such drains about 7 to 9 cents per rod. Where neither stones or tiles are to be had, I would recommend a trial being made of the faggot or turf wedge drain.

The tile manufactured of burnt clay, commonly called "the Horse shoe tile," has latterly been adopted in Britain to a great extent. The expense of carriage is moderate, and they form a durable material that will last for many years. Soles or flats of the same material, are used, on which to place the tile on the bottom of the drain. Some use wood or slate instead, and many put in the tiles without soles of any sort; but this altogether depends on the nature of the soil. If wet or soft, soles are absolutely necessary; but if a hard or gravelly bottom, the soles may be dispensed with. I have tried both ways, but the soles make the best drain.

Within the last few years the Horse-shoe tile has been in a great measure superseded by the pipe tile. These are made of various patterns, the oval and circular ones being the favourite—the oval shape similar to an egg placed on end, is considered by many the most preferable, the run of the water being so concentrated that it acts as a scour to the sediment in the pipe, and

so carries it off. These pipes are generally of a square shape on the outside, and are very easily laid on the bottom of the drain. I decidedly prefer a pipe tile of any description to a horse-shoe tile sole, as I have seen many of the latter nearly silted up, a pipe tile I never saw so.

The size of the horse-shoe tile for lateral drains is generally 12 or 13 inches long, 2½ inches wide, and 3 inches high; and the prices were $4 per 1000. The soles half-price.

The size of the pipe tile generally used for lateral drains is from 12 to 14 inches long, and and 2 inches of a bore. Some use a bore of one and a half inch, and even a bore as small as one inch; but these are not so common as the two inch bores. The price for the two inch pipe was $4 50 per 1000. The pipes necessary for the receiving drains are of a larger bore and corresponding price. I have tried a 4 inch bore to carry off the whole drainage water of 10 acres of land with perfect success.

Twenty-five years ago, drainage of land in the West of Scotland was as much in its infancy as it is at the present day in Canada. Tile manufactures were few and far between, the prejudice against draining was strong, the enlightened agriculturists persevered, and were backed up by one of the most extensive proprietors in Ayrshire, the late Duke of Portland who tile-drained the whole of his estates on the then most approved method. The result was that crops were nearly doubled, and the rent-roll greatly increased. There were many drawbacks to retard this improvement. The greatest, I believe, were prejudice and inexperience, but as the work progressed much useful information was gained and improvements made on the common method; many of the original drains were condemned, and a more perfect system followed out. I myself have seen the tenant drain his farm twice over, and in some cases I have seen the same piece of land drained three distinct times. No such thing is now thought of in Ayershire as draining with faggot or turf, and very seldom even with stones.

When the horse shoe tile was first used, and for many years after its introduction, the common depth to cut the drains was generally about 20 inches, and on a stiff retentive clay soil the drain tracks were generally from 16 to 20 feet apart, regularly over the field. The result at the depth and width was profitable, as green crops could be grown on such land after drainage that would never have been thought of without.—The cereal and grass crops were much improved likewise.

Some persons more enlightened than others suggested that deeper drains should be tried and proposed 2½ and 3 feet ones. They were thought too speculative or too plenty of money, and few would hearken to their propositions. One or two, however, did try the experiment, and found it to answer better than the shallow drains. More followed in the wake, and latterly deeper were the trials, till now the best depths are considered to be from 42 to 56 inches, accordiag to the nature of the sub soil.

For a regular system of drainage, it is necessary to ascertain the nature of the sub soil, to know to what depth, and at what distance apart, the drains should be cut. A practical hand is the best to know this, as also to lay off receiving and lateral drains. The receiving drains ought to be concentrated as much as possible to one point, in order that the whole drainage water may keep up a clean scour of the pipes, and no silt be allowed to obstruct the passage. I need scarcely remind you that all outlets from the receiving drains ought to be kept thoroughly clear, else the drains have a poor chance of succeeding.

Some advocate cutting the drain tracks across, or on the angle of a piece of steep land, so that they may catch all the water that runs down the declivity. Others again, prefer cutting the drain tracks right up the face of the declivity, so that the drains may tap all the different strata, as they overlay each other and crop out of the hill side, I have tried both plans; the latter I decidedly prefer, as you gain your object most effectually.

On the stiff clay soil of the West of Scotland, our 3½ and 4 feet drains were generally placed from 16 to 21 feet apart regularly over the field. They cost from 15 to 20 cents a rod for opening the track, laying in the pipe, and re-filling the soil. I am of opinion that the open sub-soil in this district is much easier wrought than what I was accustomed to; and though labour be more expensive here, yet I thiuk the drainage could be done for the same money. The tools for draining operations are not as yet introduced to this district; but I am informed they can be had in London, C. W.; and no man should attempt deep drainage with the common tools sold here, as the work is done with a great deal of extra and unnecessary labour.

At one time I used a drain-plough for assisting the workers in opening the drains; but I did not approve of it, as it made a rough and coarse job, and it was a cumbersome implement to work with and very sore on the men and horses. In making my contracts, I found the allowance calculated on for partially opening the tracks with the plough did not give remuneration for the teams; so that latterly I threw the plough aside as a worthless implement, and preferred to let the contracts without giving any assistance whatever.

From the great amount of money expended on drainage in Britain, I should think it is an ample guarantee that, if judiciously applied, drainage work will pay, aye, and does pay too; and if it pay in Britain why not in Canada. I have drained land in Ayrshire that was so marshy and wet that it produced nothing but the coarsest

grass, and in draining it we had to carry many of the pipes over the land by manual labour, as many parts of it would not carry a loaded cart. The tracks were 18 feet apart, 4 feet, and in some parts 6 feet deep. The first crop after draining was turnip, and they were excellent; it was followed by a crop of oats, as heavy a crop as I ever saw growing; and ever since that field has produced most luxuriant crops. When I look at the low marshy land of this Township, it always brings that field to my recollection; and I am decidedly of opinion that such land will as well repay for such improvement as the field I allude to.

There are several items absolutely necessary to be strictly adhered to in drainage operations, such as forming a uniform sloped bottom, on which to lay the pipes; the joining the pipes to each other, and connecting the lateral to the receiving drains: and fixing the pipes in a firm bed, preparatory to filling in the soil. The efficiency of the drain in a great measure depends on having these matters thoroughly done, and therefore great attention should be placed on seeing these properly executed.

When the land appears to be nearly level, great care should be taken that the drains be cut with such a declivity as will insure a free run for the water; and if any doubt exist as to the declivity, a levelling instrument should be used.

I am thoroughly convinced that draining with pipes, though the most expensive at the first, wil in the long run be the cheapest; and any one proposing to drain their land will find their aim better accomplished by doing it substantially at first, although they should do a less extent of land than by going over a greater extent of surface with superficial drainage.

Should any doubt exist as to the porousness of the soil, and its capability for drawing off the water by under drainage, I would advise experiments to be made, and would put in drains 4 feet deep and as wide apart as 40 or 50 feet. Should that distance be found too wide apart for the properly drawing off the water, it is easy to put in another drain between. Practical experience will soon teach you the proper width drains should be apart.

The majority of the land-owners of this Upper Province labor under many disadvantages; their capital is limited, their farms are in many instances but recently reclaimed from the forest, and there are so many improvements to be made, absolutely necessary to the cultivation of the land and wants of the stock, that till once all these are done, but little drainage operations can be gone into; but once thoroughly set agoing, I hope to see the day, when our low swampy land, at present worthless for cultivation, and a generator of malaria, will be converted by drainage operations and proper cultivation into the finest alluvial soil, capable of bearing the most luxuriant crops of every description.

From the scarcity of money for expending on permanent improvements, such as draining, I am strongly inclined to advocate that the Provincial Government should encourage such improvements, and follow a plan similar to that adopted by the Government of Great Britain; by giving a Lands improvement Act,—which has been the means of imparting a vast impetus to the improvement of Agriculture, increasing the produce of of the soil to such an extent as gave increased rents of from 30 to 60 per cent on many farms that came under my own observation. The working of such an Act is quite simple and not very expensive. The cost to my late constituents in Ayershire, who expended upwards of £10,000 on drainage under this Act, did not cost them 2 per cent, for all the legal charges, and Surveyor's fee; but I dare say the charges in this Province would be higher, as the smaller the sum expended, the costs are proportionably increased, the trouble being nearly the same for a large sum as for a small one. The imperial Government loaned out money under this Act, payable by annual instalments in 22 years at the rate of 6 per cent on the borrowed money.

I beg to inform you that all may now have an opportunity of testing the benefit of draining in this district, as Mr. Close, of Woodstock, has now in operation an imported machine for making tiles and pipe tiles of various sizes. Those I have purchased of his last manufacture are of such a quality as I feel confident cannot be surpassed in the Province. He is now making such preparations as will enable him by spring to supply a large demand. I believe his prices next season for the pipe tile of 2 inch bore will be about $6 per 1000. I would recommend you to make an experiment on draining, though it should be to a small extent.

Canadian Flax.

[From the Belfast Northern Whig.]

The soil of America has long been celebrated for the growth of flax. Thousands of acres of the United States are annually set apart for that purpose, but the farmers rarely think of using the straw. The great object is to take off the seed; as for the fibre, few of the growers take the least trouble so far as regards the textile material of the plant.

In Canada a considerable breadth of land is every season occupied by flax. The soil of this colony, as well as the temperature of the air, in many instances closely resemble those of the North of Ireland. A gentleman who resides within a few miles of Belfast, and who recently returned from a tour through the northern lands of Canada informs us that he passed several farmsteads, the appearance of which was very much like those in some parts of Down and Antrim. On enquiry, he found that the great proportion of the landowners were either direct Irish or the

descendents of Irish immigrants. Flax culture, as we have said, is carried on there by several of the farmers, but the deficiency of means to prepare the straw for market, and the still greater drawback arising from the want of local consumption, have hitherto kept the growth down to the mere requirements of the seed trade.

In yesterday's *Whig* we noticed the arrival in town of some specimens of Canadian grown flax, brought over by Mr. Blaikie. These samples were yesterday exhibited to several of our local merchants and spinners, and a favorable opinion has been pronounced on their quality. On making particular enquiry into the matter, we have learned that Messrs. Blaikie & Alexander, of Toronto, had grown this season about two hundred acres of flax, on a farm at Norval, about thirty miles from Toronto. In the same district, those gentlemen have erected a scutch mill, on the best principle, for the purpose of giving future growers all possible facilities as to the preparation of flax for market. The samples exhibited in Belfast yesterday, were thus prepared. Owing to the great drought by which the upper section of Western Canada was visited in the early part of the season, the fibre of the flax is shorter and less silky than it would have been under more favorable circumstances; but, on the whole, the samples shown have been valued at 8s. to 10s. the 14 lb. stone. The yield of the Canadian soil is fully equal to that of the average of the North of Ireland, some of the finer lands producing six cwt., or about forty-two stones to the statute acre.

Hitherto the chief object of the Canadian farmer has been the growth of wheat. To that species of production he clings with something like superstitious feeling, and the result is that, when a backward season comes on him, he seems prostrated, as was the Celt of former days when the potato crop proved defective. It has, therefore, been considered by thinking men that the introduction of flax culture on a scale in some degree equal to the resources of the colony would be most advantageous, and, while it would diversify the enterprise of the colonial farmer, it would add to the productive power of the Province.

The organization of the Indian Flax Society leads to the hope of vast good being accomplished for the linen trade. This, however, will chiefly arise from the increased supplies of coarse fibre, an article now so much required in the production of the heavier description of goods. Canadian lands differing materially from those of the Punjaub, promise to dosome thing towards meeting the deficiencies felt in supplies of medium and finer ranges of flax; and if forty or fifty thousand acres wery annually raised in British North America, and the great proportion shipped to this country, it would supply a growing want, without in the slightest degree interfering with the Asiatic product.

The requirements of the linen trade are, in fact, at present so large, and the prospective wants seem so extended, that, to meet the demands of spindles and power-looms, twice the existing average would not be sufficient. There are now great facilities for the transport of farm produce from Canada to Liverpool. Flax, purchased at the markets of Toronto or Montreal. would be shipped and conveyed from the St, Lawrence to the Mersey in the space of twelve days.

As the matter stands it is one of mere individual enterprise. If the farmers of Canada prepare a portion of land for flax-growing, and be able to produce a good article of fibre, there will be no lack of customers for it. Continental spinners will now be competing with those of Leeds, Belfast, and Dundee, for the purchase of certain qualities of flax, and the more extended the growth of all varieties of raw material, the more successful will be the enterprise of manufacturers.

Farm Implements and Machinery.

We copy the following excellent advice on this subject from the *Country Gentleman*:—

During the more leisure season of winter, farmers will find it advantageous to examine, repair and improve all their implements and machines. It is in these that agricultural progress has been most strikingly marked within the past twenty years; and the cultivator who does not keep pace with the improvements made is wasting a valuable element of success. There is less danger of imposition in this direction than in some others, for a year's use will establish the character of any machine. A knowledge of the principles of mechanism, added to the experience which every observing farmer should possess, will enable him, in most cases, to judge with a good deal of certainty beforehand on the value of a new invention.

There are two points that should always be kept before the farmer's eye when making any provision of this kind. The first is, simplicity of structure. A simple machine is cheaply bought, easily managed, not easily deranged, and quickly restored to repair. Other things being nearly equal, always buy the simplest machine. The crowbar is a fine illustration—simple, efficient, used by every one, valuable for many purposes, and never out of joint. The great difficulty in replacing the plow with any other cultivating machine is its great simplicity. Complex husking machines have all given place to the old-fashioned appliance of thumb and finger, armed, sometimes, with husking thimble or peg, but oftener without.

The greatest advantage derived from machinery is where the powerful muscles of horses are made to accomplish what before was done

by the weaker force of man—as in the mowing or threshing machine; or where the slow manipulation of fingers, with no expenditure of strength, is changed to a greatly increased rapidity of the same work by mechanical combinations, instances of which occur in the garden drill and the sewing machine. Some complexity is here necessary, and is admissible when great speed is gained; but when a machiue works but little faster than the unassisted hands, it may be discarded, as a universal rule, unless extremely simple.

The second point to observe in providing farm machinery is to select such as each farmer can work with his own unborrowed forces. A threshing machine, for example, that requires six or eight horses to drive, one-half of which must be hired or borrowed for the occasion—or six or eight hands to man it, one-half of whom must be collected through the neighborhood before a sheaf can be threshed—is an inconvenient machine—troublesome and not economical. If the farmer has but two horses and two hands, he should procure a thresher which he can work. He has then complete command of his own operations, and can, on any occasion, for a day, half day, or less, set his machine to work when he wishes a supply of grain for seed or for bread, or straw for his cattle. Many spare or stormy days may be advantageously occupied where such a convenience as this is always at hand. The farmer's wife will not complain of being relieved of boarding a number of hands required to man a ponderous ten-horse thresher, nor will he himself get the fidgets so often in seeing all his collection of men standing idle while a broken cog is undergoing repairs.

Drilling vs. Broadcast Sowing of Wheat.

There is, perhaps, no grain crop in the United States in which greater improvement has been made in its cultivation than in wheat, particularly in the great West—and the reason of this is obvious. Until within a few years our Western farmers were without the benefit of railroads and consequently without a market for their surplus wheat, hence there was no motive to increase the crop by extra cultivation beyond the wants of the family or neighborhood. But in more modern times since the opening of the markets of the world to western farmers, wheat has become one of the most profitable crops in a large section of country, and hence our progressive farmers have found it to their interest to prepare their lands better and to make such other improvements in wheat culture as might be brought with more and better implements for cultivation. Among these the plow, the roller, the harrow, and the drill, have been added or greatly improved, and yet we are far behind the best farmers of Western New York and those of England in the perfection of wheat growing. Among the improved implements that have been introduced there are none more important than the wheat drill; a large portion of the wheat that is sown is made to follow immediately after corn where the drill cannot be used to advantage owing to the interference of the corn-stubble and weeds that are left on the land after harvest. But where wheat is sown on fallow land or after clean crops, the benefits of the drill have been enumerated again and again by those who have used them, and we do not know an instance where the drill has been introduced that the farmer is willing to discontinue its use where the nature of the preceding crop will admit of its operation; and it is only necessary for the careful observer to witness the crops growing together at any stage of their growth that have been put in by the two methods, to be fully convinced of the advantages of the drill system.

A prolific writer, and constant contributor to one of our most popular agricultural periodicals, has labored through several columns in two consecutive numbers of the work, with the promise of "further consideration of the subject, when other facts and inferences will be adduced in illustration of the subject," to prove that drilling wheat has no advantage over the old method of scattering the seed promiscuously over the surface, to take its chance for being covered at sufficient depth to insure vegetation, or to remain on the surface liable to be devoured by the birds.

It is but a short time since the same writer labored ardently to prove that in transplanting trees from the nursery with their roots mutilated and half destroyed, as is too often the case in digging them, it was better to plant them with their entire tops than to cut them back in proportion to the loss which their roots had sustained; and in a later number of the same work, the writer labors with equal industry to prove mulching newly set trees is equally inadmissable. Now, all experience, common observation, and the least knowledge of vegetable physiology, as well as common sense go to prove the absolute necessity of the one and the importance and advantage of the other of these processes; but the writer seems to have a mania for taking the *opposite sides* of all popular questions of the day that have a bearing upon improvements in agriculture. With all intelligent readers his teachings are not calculated to do any material harm. But there are some who may receive his arguments as law, and practice after them inasmuch as they appear without dissent or comment by the editors of one of the foremost papers in the country. It is the giving publicity to the false teachings of such eccentric minds, that too frequently creates the objection to "Book Farming," particularly when they appear in such works as we have alluded to. We are pleased to see all important matters discussed, so long as argument is likely to throw light upon the

subject, with the prospect of improvement, but when the writer has no other object but to appear in print, and attempts to overthrow established principles by false reasoning, it is better for the public that he should remain silent.—*Valley Farmer.*

Observations on the Physical Geology of the Western Districts of Canada.

BY CHARLES ROBB, C. E., HAMILTON, C. W.

From The Journal of the Canadian Institute.

(Continued from page 11.)

Details of the Rock Formations.—A very complete and most interesting section of the strata in a line running north and south, is afforded by the cutting on the line of the Niagara Falls and Lewiston Railroad, and by the ravine itself through which the great river flows.* Taking the section at this most interesting locality as the basis of our future enquiries, I shall proceed to describe briefly the component parts, and shall take occasion while it is under review to recapitulate the arguments of Lyell and others, to prove the fact of the retrocession of the Falls from Queenston Heights to their present site.

The strata in ascending order consist, first, of a soft red shaley and purely argillaceous marl, partially striped and spotted with green, seen in the bank of the river at Queenston and extending thence to Lake Ontario, and attaining a height of about one hundred and ten feet at the escarpment at Queenston. This formation, which is entirely devoid of calcareous matter, is regularly stratified, and interspersed with thin veins of a light green rock of similar composition though somewhat harder, the colors being evidently derived from the presence of iron. The traces of organic remains in this bed are very obscure though not altogether wanting, and it is chiefly remarkable as forming the base of the system, and as occupying the entire area between the foot of the slope of the mountain and the lake shore for the whole distance from the Niagara River to Oakville.

The second stratum is a bed of very hard light grey quartzose sandstone, marked frequently with ferruginous spots, but forming an excellent building material, and quarried extensively at Lewiston, Hamilton, Dundas and other places. This bed is about fifteen feet thick at Queenston, and contains the remains of fuci or sea weeds. I have also observed it to be distinctly ripple-marked in some localities. Above this for a thickness of about sixty feet occur alternate layers of red shale or marl, similar to No. 1, and of sandstone or limestone, the former principally near the top of the formation. The harder rocks here are particularly rich in organic remains, some in a beautiful state of preservation, and all remarkably characteristic of the geological epoch to which these formations belong, consisting of corals, brachiopods of various species, tentaculites, encrinites and trilobites. Of the trilobites, a remarkable crustacean genus strikingly characteristic of the Silurian system all over the world, I have only detected a few fragments, but they are sufficiently unequivocal.

Next in succession is a grey and mottled sandstone about fifteen feet thick, forming the upper member of what is called by the New York State Geologists the Medina Sandstone group. Encrinites, corals and broken shells prevail in great abundance at the top. Overlying this bed is a band of light green shale five feet thick, turning into clay on exposure to the atmosphere. This stratum forms the lower member of the Clinton group of New York, and is remarkable as being traceable for vast distances east and west in precisely the same relative position, and of identical mineral character. Next in order occurs a compact bed of light grey, very hard limestone, about sixteen feet in thickness, copiously charged throughout its entire mass, but chiefly towards the top with the bivalve shell *Pentamerus* (a genus also found extensively in a corresponding position in the Silurian systems of England and Russia) as also with a few species of *Atrypa*, a remarkable coral called *Favosites gothlandicus*, &c. This bed forms the upper member of the Clinton group, and wherever it is found is an exceedingly handsome and durable stone for building purposes. Owing to its hardness it forms a distinct escarpment wherever exposed for any length of time to the weather. Then follows the formation usually denominated Niagara shale, about eighty feet thick, consisting of a homogeneous stratified or laminated mass of bluish-grey, sometimes nearly black, argillaceous, arenaceous and calcarous slatey rock, hard and solid in the bed, but decomposing and crumbling when exposed to the atmospheric influences. It seems to be devoid of fossils, except towards its junction with the underlying hard limestone, where it is plentifully charged with *Pentamerus* and *Atrypa*.

Lastly, the escarpment is capped by the Niagara limestone, (so called) a massive and very hard dark blue or more nearly black rock, the lower portions being in very thick solid beds, while towards the top the partings occur more frequently. This rock is magnesian and siliceous in mineral character, and is highly bituminous, being known in many places to emit inflammable gas through the seams. Occasionally it is cavernous in structure, and is copiously interspersed with druses or cavities containing calc-spar, gypsum and sulphate of Strontian. I have been unable to detect any fossil remains in this forma-

*This section is represented graphically in Sir Charles Lyell's *First Visit to the United States*, 1841-2, Vol. I. page 36, to which we would refer our readers.

tion, although I believe they are not altogether wanting. It is over this rock that the great cataract is precipitated, and it forms from its hardness a species of coat of mail or armour of proof to resist the too rapid erosions of the torrent.

Proofs of Retrocession.—It will serve at once to illustrate strikingly what may be called the mechanical properties of the strata we have been considering, and at the same time to show by a most remarkable example the value of geological evidence in regard to duration of time, if we take up at this stage the subject of the recession of the great Falls.

It has long been a well known fact, that behind the mighty cataract there existed a vast cavern formed by the action of the water and air set in violent motion by the descending torrent upon the soft shales underlying the Niagara limestones; and this fact must have suggested to an enquiring mind the idea, that as the soft material became gradually undermined or excavated, the weight of the superstructure and impetus of water must have caused the harder superincumbent rock from time to time to give way, and thus occasion a recession of the Fall in its position. In accordance with this idea, it is found from historic evidence, (which unfortunately in this point affords less corroboration to geological theories than in questions relating to the old world), that changes of the kind referred to had actually taken place; and the appearance of the bank below the Falls where these changes had occurred within the memory of man is so precisely identical in character with the whole gorge for seven miles below, that a philosophical observer of the phenomena of nature would be irresistibly impelled to the conclusion that the great Fall formerly existed at Queenston, and that the river must have sawed its way through this whole distance—provided sufficient time were allowed for the completion of the work. Sir Charles Lyell concludes, after the most careful and repeated investigation of the recorded facts, as well as the varying nature of the strata, that the average recession was not more than one foot per year, and that consequently it must have taken 35,000 years for the retreat of the Falls from the escarpment at Queenston to the present site. It seems by no means improbable that such result would be no exaggeration of the truth, although we cannot assume that the retrograde movement has been uniform. At some points, owing to the greater softness of the strata and the lesser width of the ravine, it might be expected that quicker progress might be made; but on the other hand, it must be observed that at the commencement of the process the Fall must have been nearly twice its present height and consequently the amount of material to be excavated proportionally greater. This estimate of the time required for the scooping out of the gorge, as Hugh Miller remarks, is based upon exactly the same process of reasoning by which one would infer that a labourer who had cut a ditch two hundred yards long at the rate of ten yards per day and was still at work without intermission, had begun to cut it just twenty days previous.

This theory based upon historical, is amply corroborated by geological evidence. If we examine the structure of Goat Island, between the American and Horse Shoe Fall, we shall find that the superficial deposit consists of regularly stratified horizontal fresh water beds of gravel, sand and loam, in all about twenty feet thick, copiously charged with shells of the same species as now inhabit the waters of Lake Ontario and the Niagara River. These beds are entirely above the level of the water as it precipitates itself into the mighty gulf. Precisely the same formation will be found on the American side of the river exactly opposite, and extending for a considerable distance below the Falls on the top of the cliffs, and bounded towards the east by a distinctly traceable ancient river terrace cut out in the clay or drift formation which covers the whole country. This deposit, in which also the remains of a Mastodon have been found, occupies the place which the ancient bed, and alluvial plain of the Niagara would naturally have filled, if the river had extended farther northwards at a level sufficiently high to cover the greater part of Goat Island. At that period the ravine could not have existed, and the river must have been dammed back several miles lower down. The old river banks are distinctly traceable facing each other on both sides of the gorge, at least as far down as the Whirlpool, and vary in width from about thirty to three hundred feet from the brink of the precipice. At the summit of the cliffs overhanging the Whirlpool on the American side, there occurs a deposit forty feet thick of fluviatile strata, precisely identical with those on Goat Island; and it must be borne in mind that nowhere do these deposits extend, or can they be traced, beyond the old river banks.

Here then we have the most unequivocal evidence that at a date comparatively modern in the geological epochs, though very remote as regards the history of our race, the great Falls must have been situated at least four miles below their present site; and in the absence of distinct traces of their existence still further northward we may reasonably and justly infer that they must have primarily been situated at the escarpment at Queenston. There is no ground for supposing that the excavation was assisted by an original rent in the rocks, and no appearance of a fissure occurs at the present site of the Falls.

The dip of the strata being twenty-five feet to the mile southward, and the slope of the river bed about fifteen feet in a mile northwards, these two inclinations combined have occasioned a diminution of forty feet in the perpendicular height of the Falls for every mile that they have receded southwards. When they were situated at the Whirlpool, the hard quartzose sandstone

was at the base of the precipice, and here the cataract may have remained stationary for ages. Even now the obstruction occasioned by this ledge in the bottom of the river causes a partial damming back of the water, which, overleaping this barrier, rushes with still more fearful velocity down the gorge. This phenomenon, together with a remarkable break (which I shall afterwards advert to) in the continuity of the strata on the Canadian side at this point have no doubt given rise to the Whirlpool. In regard to the future retrocession of the Falls it is susceptible of clear proof that when they have travelled back two miles or opposite to the village of Chippewa, the massive Niagara limestone now at the top will then extend also to the base of the Falls, and its great hardness will probably arrest the excavating process, if it should not have been previously stopped by the descent of larger masses of the same rock from the cliffs above. In this latter case, instead of a fall we shall have a rapid of about the same slope as the present rapids above the falls, (fifty feet in three-fourths of a mile); but very much more broken and irregular owing to the greater size of the masses of rock forming the bottom.

The next question to which we are naturally led, relates to the origin of the Falls, but this subject I shall defer till the close of this article, when, after describing the principal geological features of the region bordering on the head of Lake Ontario, I shall attempt to indicate the succession of events which have produced them.

Agricultural Intelligence.

How Carrots affect Horses.—The carrot is the most esteemed of all roots for its feeding qualities. When analyzed, it gives but little more solid matter than any other root, 85 per cent. being water; but its influence in the stomach upon the other articles of food is most favourable, conducing to the most perfect digestion and assimilation. The result, long known to practical men, is explained by chemists as resulting from the presence of a substance called *pectine*, which operates to coagulate or gelatinize vegetable solutions, and this favours digestion in all cattle. Horses are especially benefitted by the use of carrots. They should be fed to them frequently with other food.—*American Stock Journal.*

Salting Wheat in the Mow.—W. P. Cooper, of Lancaster, Pa., in an essay on Cutting and Harvesting Grain, published in the *Farmer and Gardener* says, in storing wheat in a mow, he commences on one side, places the sheaves in regular layers with the butts outside, tramping heavily on the butt of each as it is laid down.—The next layer is placed with the tops lapping about half way over the first, care being taken to keep the heads or tops uppermost. When the entire space of the mow is covered in this way, common ground salt is sprinkled all over the mow on the top of the layer, at the rate of four quarts to every twenty dozen sheaves of wheat—a larger proportion of salt if the sheaves are very large. During the sweating, the salt is dissolved and absorbed by the grain and straw. The effect of this practice has been, to make the grain brighter and bring two or three cents more per bushel, than that which was not salted.—Millers say the yield of flour is larger and whiter. Cattle eat the straw freely. It is a most effectual remedy against the barn weevil. Experience has *proved* this to be a fact.

[This mode of storing wheat in barns is much practiced in England, but we have never seen salt applied. The benefits above mentioned seem highly probable, and can easily be tested. The shaff and straw will no doubt be more rel ished by cattle in consequence of the salt.—Ed.]

How to save manure in Winter—A correspondent of the New England *Farmer* gives the following practical and sensible directions: "It is not every farmer that has a good cellar under his barn, but every one should have a wheelbarrow upon which he can carry the manure from the stable into the barn yard, and beginning on one side of the yard, dump one load in a place till he has covered the whole surface, or as much thereof as he pleases, then go over with another course in the same way, and so on through the winter, and in the spring he will find the droppings of the cattle well mixed with their bedding and the litter of the yard, and no unsightly heap under his stable windows. If he has sheds for his cattle or sheep under which he can deposit as above, so much the better."

[The advice in the last sentence is most important. Manure should be collected as far as possible *under cover*, sprinkled over with the urine of the animals. When exposed to rains it loses much of its ammonia and most valuable salts.—Ed. C. A.]

Importation of Pure Bred Arab Horses into the United States.—The Hon. Governor Seward has imported from Syria a Stallion, 7 years old, and a 2 year old colt, which are said to be of the best blood in the Arab race. The offspring of the older stallion are described as excellent; the charge for covering each mare in his native country was *five camels;* the value of which is said to be from $80 to $100 each; showing the value put upon this horse in Arabia. The introduction of pure Arab blood among the best class of our mares on this continent cannot fail to be advantageous, and we hope ere long to receive some benefit here in Canada from such enterprises.

Southdown Sheep.—We learn from our American exchanges that Mr. Samuel Thorne. of Duchess County, New York, is now in Europe selecting Southdown sheep for his splendid flock. His first importation, comprising one ram and ten ewes, has reached New York in safety. The animals are all from the breeding flock of Mr. Jonas Webb, and are said to be the most superior and expensive lot that probably was ever imported. The ram won the first prize in his class at the Royal English Show at Canterbury last summer; and, having attended that meeting, we have a very distinct recollection of Mr. Webb's animals, which were superior in point of size, symmetry, and high breeding to anything we ever saw. In fact Webb seems to have reached perfection in this his favorite class of sheep. It is said that the ram cost Mr. Thorne *twelve hundred and fifty dollars* in England, and that at this enormous price the purchaser congratulates himself on the acquisition! We saw no Southdowns afterwards, neither at the Irish or Scotch Shows, that would compare for a moment with Mr. Webb's unrivalled sheep. We heartily wish Mr. Thorne every success in his praiseworthy enterprise.

System of Agricultural Instruction in Belgium.—After discussing and agitating this question for many years, the Belgian Chambers have at length passed a special law for the organization of the system of teaching Agriculture.

The following establishments are founded for the purpose by the State, or with its assistance:

A. A Veterinary School.

B. An Institute of Agriculture.

C. Two Schools of Practical Horticulture.

The course of Instruction in these will be as follows:

A. Veterinary School:—Natural philosophy, chemistry, botany; descriptive and comparative anatomy of domestic animals, general anatomy; physiology, materia medica, pharmacology and general therapeutics; general pathology; pathological anatomy, special pathology and therapeutics, pathological surgery; *zootechnie*, embracing hygiene, breeding and rearing of domestic animal; sanitary discipline, medical jurisprudence, farriery, surgery, obstetrics, and clinical medicine and surgery.

B. Agricultural Institute:

Rural Engineering, embracing geometry, stereometry, surveying and tracing, taking of levels, linear drawing, drainage, irrigation, agricultural implements, and rural architecture;

Physical and Chemical Sciences, embracing natural philosophy, meteorology, chemistry, chemical analysis and manipulations, and agricultural technology;

Natural History, embracing mineralogy, geology, botany, and zoology, applied to agriculture;

Zootechnie, embracing animal anatomy and physiology, hygiene and the breeding, rearing and management of domestic animals;

General and special agriculture;

Rural and forest economy, rural jurisprudence, and knowledge of farm accounts;

Practical agriculture and horticulture.

C. Schools of Practical Horticulture:

French and Dutch languages, arithmetic, construction of greenhouses and garden works; botany, theory and practice of horticulture, and accounts.

The course of study at the Veterinary School will extend over four years, and at the Institute of Agriculture and the Horticultural Schools will be limited to three years.

With such a course of instruction, and a full staff of able professors, it will only be necessary in order to insure success, that the candidates should possess a solid education. This rule, so often overlooked in special schools, will, it is to be hoped, be enforced by government.—*Revue Populaire des Sciences.*

Horticultural.

Fruit Growers' Society, Western New York.

Editor of Canadian Agriculturist.

Dear Sir,—I send you herewith an abstract from my notes of the proceedings of the Fruit Growers' Society of Western New York, at their meeting held on the 9th and 10th of January, 1861, at the City of Rochester, of which not a little will be found of interest to growers of fruit in Canada. A full account of the proceedings of the Fruit Growers' Association of Upper Canada, at their last meeting held at Hamilton, on the 16th and 17th inst., will be furnished you by the Secretary for publication in your valuable journal. It is to be hoped that all growers of fruit in Canada will take an interest in their Fruit Growers' Association, and that thus the varied experience of cultivators in the different sections of our Province will be brought together in a form calculated to be of lasting benefit to our country. It is a noble country, possessing vast and varied resources, among which its fruit growing capacities are of considerable importance, requiring only to be fostered and intelligently developed to contribute largely to the comfort, health, and wealth of our people.

Very truly yours,

D. W. Beadle.

St. Catherines' Nurseries, Jan., 1861.

FRUIT GROWERS' MEETING, HELD AT ROCHESTER, JAN. 9TH AND 10TH, 1861.

The following subjects were prepared by a committee, and presented to the meeting for discussion, of which discussion those noted will give the more important points.

SUBJECT 1. The best method of gathering, packing and transporting pears to market.

Dr. Sylvester, of Lyons. The fruit should be fully developed, but gathered before severe frosts, handled very carefully, allowed to sweat, then packed in half barrels, gently jarred many times while filling, headed up tight so that the pears can not move, and sent to market near the time of ripening. In case of tender varieties, should wrap each pear in paper.

Mr. P. Barry, Rochester. In gathering Winter pears, the fruit should be picked before the leaves fall, carefully, by hand, assorted and put in a cool, airy place, dry and free from frost. Placed his on a barn floor, and covers them deep with leaves to preserve them from frost, and when the thermometer begins to fall very low, removes them to a cool, dry cellar. Well matured pears will ripen finely at 40° Farenheit; it is not necessary to bring them into a warm room.

Mr. H. E. Hooker. Did not think it necessary to take so much pains in spreading the fruit out on a floor and covering with leaves; would place the fruit in "half barrels," (not a barrel sawn in two,) with holes bored in the head, keep out of the cellar in a cool, dry, airy place, until very cold weather, until they were in danger of being frozen if left there longer, and then remove to a cellar where the thermometer would stand at about 40° Farenheit.

2nd SUBJECT. The best method of preserving fruits so as in any way to prolong the period of consumption.

Mr. H. E. Hooker. Thought fruit could not be kept fresh much beyond the usual period of maturity without impairing its flavor.

Mr. Sharpe, of Lockport. Had on exhibition some Bartletts, Louise Bonne de Jersey, Swan's Orange, Seckel, and Beurre Diel, which he had kept in the green state, but as he had not perfected his experiments, he did not wish to say how he had preserved them. These pears had been taken from the tree after they had attained their full size, but before they had begun to ripen, and were now, Jan. 9th, as hard and green as when first gathered. The ripening process seemed to have been entirely suspended.

Mr. H. N. Langworthy. Had kept Bartletts from ripening by wrapping each pear in paper, and then enclosing them in a tin box closed up tight, and immersing them in the ice of his ice-house.

Mr. W. P. Townsend. Had kept them by wrapping them in paper, then tieing them up in a woollen cloth and setting them on the ice in his ice-house; they kept perfectly sound, but soon discolored on exposure to the air, and were insipid.

Mr. P. Barry, of Rochester. The ripening process of pears if suspended long will never be redeemed. If ripe they may be kept a short time, but if kept long will lose their flavor. Fruit rooms should be above ground, cool and dry, kept as near as possible at 40° Farenheit, so as to let the ripening process go on, but very slowly.

Mr. Smith, of Geneva. Had kept plums and other early fruits in boxes, set into the saw-dust of his ice-house, but they all lost their flavor and were worthless.

Dr. Tobey, of Rochester. Exhibited some Catawba, Isabella, Diana and Clinton grapes, which he said were picked about the first of November, put into small paper boxes, 8 x 12 inches, and 4 inches deep, holding about five pounds each, and placed in a dry, cool cellar.

Mr. H. N. Langworthy. Keep grapes until May in peach baskets, a layer of grapes and of paper alternately, having care to put in none but sound grapes.

Dr. Sylvester, of Lyons. Prefers to have grapes fully ripe; take out all that are green or bruised, and pack immediately, having the grapes dry, in a dry day, in shallow paper boxes, not more than two layers in each box, with white bibulous paper between, and keep in a dry, cool room up stairs until there is danger of freezing. The Clinton kept very well until into March, and had a very sprightly flavor. Isabella keeps, but not with so sprightly a flavor.

Mr. Chas. Downing, of Newburgh. Had tried nearly every way to keep grapes, but had not succeeded.

Mr. Barbour, of East Bloomfield. That in his vicinity he had known 30 tons of grapes packed, but that they always *cure* the stems before packing to prevent them from moulding. They have a drying house in which they have no fire, except enough to keep out frost; the grapes are spread out on shelves, thoroughly ventilated, and kept from two to four weeks. The grapes do not shrivel at all if fully ripe, in this process of curing the stems.

Mr. Larrowe. Would cure the stems by placing the grapes in half barrels, covering the top with paper, which is removed as often as it becomes damp. Packs about five pounds in each paper box.

3rd SUBJECT. Can the yellows in the peach be introduced by the importation of trees from infected districts?

There was considerable discussion on this subject, Mr. Chas. Downing, maintaining that the disease was contagious, Mr. P. Barry holding the opposite opinion.

4th SUBJECT. Which is the best stock for the cherry for general purposes, the Mazzard or Mahaleb?

Mr. W. P. Townsend, of Lockport. The Ma-

haleb is hardier and healthier; the wood is harder.

Mr. Ellwanger, of Rochester. The Mahaleb adapts itself better to different soils, particularly clayey soils. Some varieties when worked on the Mazzard are apt to crack in the bark, and the gum to exude, such as the Black Tartarian; and these we now work exclusively on the Mahaleb, on which stock they are not subject to this disease.

Mr. Chas. Downing, of Newburg. The cherry on the Mahaleb stock is much better for the north and west.

5th Subject. The Northern Spy apple, what is its value as an orchard fruit?

Mr. P. Barry. This subject was introduced at my suggestion, as I wished, now that we had considerable experience, to ascertain the views of orchardists in relation to it. It has been charged with being a shy bearer, that a large part of the fruit is small and knotty, and that it would not keep. Now not one of these charges have been sustained by my experience. I think the Spy is improving in value and quality every year; that it is the best of all the apples, both in flavor, size, beauty and perfume; but it is my desire to hear the experience and opinion of others.

Mr. Sharpe, of Lockport. Picked four barrels from his tree in 1859, and five in 1860; they were unsurpassed in flavor, and those of 1859 kept fresh and fine until April and May.

Mr. H. T. Brooke, of Wyoming. My trees have been now planted five years, and bore this year for the first time.

Mr. A. Fish, of Rochester. Thinks the tree slow in coming into bearing; that those who must have their apple trees bear the next year after planting will be disappointed, but if they will have patience to wait a few years, they will be abundantly satisfied.

Mr. Hoag, of Lockport. As to their keeping qualities would say, I have found them in the New York City Market in June, side by side with the Rox Russet. The Chicago dealers seek eagerly for this variety.

Mr. Smith. Has only one tree; it bore nine barrels this year.

Mr. Barbour, of East Bloomfield. The Northern Spy originated in East Bloomfield, on the farm of Mr. Humphrey. I have known the apple for 25 years. It is thought to be one of the best keepers and very best of apples. A great many orchards have been grafted with the Spy in my County, and the result seems to be, that in the part where the land slopes south, and where the soil is dry, gravelly loam, the Spy is a very great favorite and the tree in great demand; but where the land slopes north, and where the soil is stiff and cold, the Spy is not so popular. I know some trees that must be now 75 years old; and when old, the tree needs to be well thinned out and manured. The fruit keeps until June; but it is easily bruized and difficult of transportation in a fine state to market. The Spy often escapes late frosts, which destroy the crop in other varieties, by reason of its putting forth its leaves and blossoms so much later than other varieties.

Dr. Sylvester. My trees did not bear full crops until they had been set out from 8 to 10 years, but I esteem the fruit highly for its flavor and long keeping.

Mr. E. Moody, of Lockport. I think the Northern Spy to be the best apple that ever grew. I have known them growing on a low, moist sand and on a stiff clay, and they bore fine large crops of splendid fruit. I esteem it a most valuable fact that the tree blooms late, thereby often escaping late frosts.

D. W. Beadle, of St. Catherines, Canada. Had found the fruit very uniform in size, large, very handsome, and to hang unusually well on the tree, so that the Spys yet remained, notwithstanding high winds, which had blown off other varieties almost entirely.

Mr. P. Barry. All apples are best on a warm, dry soil, and require judicious pruning; and if the Spy needs rather more care than most varieties, is is enough better than any other to pay for it. The tardiness in coming into bearing is in reality no objection to it whatever, the tree only gains size and strength to bear a full crop. I am now fully satisfied, after hearing what has been said, that my opinion of the Spy was correct, and that with a fair amount of care it proves to be the *finest and most desirable of apples.*

Mr. H. N. Langworthy. The Spy has some faults; the tree is prone to grow too high, and the fruit requires very careful handling, for it is as thin skinned as a South Carolinian, but it keeps its fine spicy flavor longer than any other apple.

6th Subject. Is it advisable to plant in Western New York the White Doyenne pear for orchard purposes, in view of its present liability to crack and spot in certain localities?

As this best and most valuable variety of pear has not been known to crack at all in Canada, it will hardly be necessary to go into the details of the discussion. From the testimony given, it appeared that in the vicinity of Rochester and Lockport this variety was nearly worthless for market purposes on account of the cracking and spotting of the fruit, while in the vicinity of Canandaigua and Geneva, it was entirely exempt from this malady, and the fruit fine and fair. It may be a matter of some interest to our fruit dealers, who import pears to supply the market of our cities, to bear this matter in mind when arranging for their next fall's supply.

7th Subject. What is to be understood by the term, a *standard*, and what by the term a *dwarf* tree?

The discussion on this subject resulted in the conclusion that in using the term "dwarf,"

the nurserymen and intelligent purchasers understand a tree that has been worked upon a stock of a dwarfish habit of growth, thereby lessening the tendency of the tree to grow large and inducing early and greater fruitfulness. In the case of the pear this is accomplished by working, (that is grafting or budding) the pear on a quince stock, and in the apple, by working it on the paradise stock; and so of other fruits. The term "standard" was used in contradistinction from "dwarf," meaning a tree worked on a stock that allowed of the full and normal development belonging to its kind, as the pear on a pear stock, the apple on the common apple stock. Some persons have very erroneously supposed that a "dwarf apple" was a peculiar kind of apple, of small size in both tree and fruit, but it is not so; we call the Rhode Island Greening or the Northern Spy, a "dwarf apple" when grown on the Paradise Stock, by which means the tree only is made smaller, but the fruit grows to its full size and excellence; and in some instances, particularly pears, the *fruit* grows to a *larger size* and acquires a *higher flavor* than when grown on "standard" trees. Some persons are in the habit of calling a tree that is *pruned* so as to form a low head, "a dwarf;" and this use of the term is very likely to mislead and induce people to expect from such a tree a small growth and great fruitfulness, only to be disappointed.

8th Subject. What influence has the stock upon the graft, in modifying or changing the quality of the fruit?

No person present having conducted any experiments sufficiently accurate to throw any light on this question, it was laid over for consideration at a subsequent meeting.

9th Subject. In transplanting trees, is pruning the tops and roots of importance, and if so, under what circumstances?

Mr. Barbour, of East Bloomfield. I cut away a good deal of the top so as to make it correspond with the cutting of the roots that necessarily takes place in digging up the tree; and pare smooth any bruized or mangled portions of the root.

Mr. Herendeen, of Macedon, had tried an experiment last spring bearing on this question. He had planted a lot of trees alike in all respects, except that a part he did not prune at all; another third he pruned—in some, and the other third he pruned—in close; and those cut in closest lived and grew the best.

Mr. P. Barry would, by all means recommend that the tops of the trees be well pruned back in order that the tree thrive well on being transplanted; and if the fibres of the roots have become matted together, would cut them away sufficiently to let the earth be easily and thoroughly worked among the roots in setting out.

Mr. Sharpe, of Lockport, in transplanting *pear trees* is in the habit of cutting off all the top, leaving only about 18 inches of the trunk or stem of the tree, and finds that the trees live and grow best when treated in this way.

The time fixed for adjournment having arrived, the Society adjourned to meet at Syracuse, at the call of the Council.

Veterinary.

The Relation of Veterinary to Social Science.

Concluded from our last.

The alleys and closes of Edinburgh are often complained of. It is notorious that in many parts typhus is a constant disease, clearing out numbers of the miserable poor who huddle together wherever they can procure shelter, a shelter poisoned not only by the filth and foul emanations dependent on the congregation of human beings, but surrounded by the darkest, dirtiest, and most unhealthy cowsheds, with all their disagreeable appurtenances. One person, once a flesher, is expected, as I stated in 1847 to the then Lord Provost of Edinburgh, to be in attendance daily in the dead-meat market, to visit butchers' shops, be on the look-out at railway stations for carcases coming in from the country, call twice daily at the police office, and is likewise expected to draw up a report (which it is not in his power to do), giving the number and state of the byres and their inmates, to visit thereafter these byres, see if any sick animals are in them, and should he find any, to watch them narrowly, to ascertain how their carcases are disposed of. Gentlemen, the case is worse now than in 1857, because I can assert, on the best authority, that the Inspector appointed for the slaughter-houses proved incapable of judging the carcases; and the dead-meat market inspector, on whom devolve the above duties, has in addition, to attend daily, to do the duty of inspector at the slaughter-house, and judge any carcase submitted to him. In 1857, both inspectors had been fleshers. I believe I am correct in stating that now only one who has been changed since then, has been accustomed to the trade, and to judge meat. With regard to appointing fleshers as inspectors, I said in 1857, in a letter which I addressed to the *Scotsman*:—1st. It would not be difficult to prove that as fleshers they are rather disqualified than rendered fit for the office of inspectors, being accustomed to certain practices peculiar to such trade, which almost precludes them having a strict and unprejudiced notion of what is really lawful and justifiable, and what is not. 2nd. All those conscious of the difficulty of *post mortem* examinations and the recognition of morbid lesions, must give evidence to the effect that a scientific

man can alone undertake the task of determining the nature and importance of appearances in the dead bodies of diseased animals. I need insist but little on this point; but as proof, I may mention having observed extravasations of blood and acute phlegmons occurring in the malignant "black quarter" of cattle, looked upon as simple bruises, and the carcases passed as wholesome, the animals being young and fat; and the tubercles characteristic of phthisis passed over as unimportant, because of common occurrence, and, provided the meat was marketable—viz., fat enough—the diseased parts were cut away, and the carcases sold."

This subject, gentlemen, is one which has interested me since the days I was a student in the London Veterinary College, when I wandered around the London dairies, and saw the disgusting practices incidental to the sale and consumption of diseased cows:—how the most filthy products of disease were hashed up with other meat, equally unsightly and unpalatable, to make sausages; how a lot of the carcases of cows were polished, and dressed up with the fat of two or three fat young bullocks killed with them; and how the flesh of diseased animals not only found its way to the poor man's home, but to the table of the middle and upper classes from the quarters sold to the butchers who could not kill enough weekly for their own consumption. Edinburgh people may be gratified by the knowledge that most of the bad carcases are trucked to London; but every person with the slightest regard for decency and humanity must revolt at the unmitigated evil which I have striven to expose.

There are difficulties in the way. They are so numerous that the champions to face them will not easily be found. The gratitude of the people would reward any public man who would seriously consider the question. No city offers better opportunities for a rigid system of inspection than Edinburgh, and only one objection exists, viz., its expense. This would be comparatively trifling; and I wish to ask, where is the person who would resist the infinitesimal tax upon the price of each stone of meat sold in Edinburgh, to ensure, so far as science can ensure, that the meat dressed daily for dinner is the *bona fide* nutritious food to be derived from healthy stock? The influence on Veterinary-science, by the opportunities which the office of inspector would give to the Veterinarian, would soon be very obvious; and the persons required for such offices needing a better acquaintance with pathological anatomy and disease in general, than is usually possessed by students in leaving College, would compel many to work longer and harder in their profession than it has been usual to do.

I hail with pleasure any movement which turns public attention to our profession, and none would prove its public importance more than the judicious employment of veterinarians, as above stated. That the services of the veterinary surgeon are appreciated, is amply testified by the vigorous steps taken at present in Ireland to establish a Veterinary College. On that subject I have expressed a decided and favorable opinion, though I have already observed remarks in public journals condemning the project. The reason assigned is, that Irish students would benefit by contact with Englishmen and Scotchmen in the Veterinary Colleges of Edinburgh and London. I have distinctly declared that great difficulty must be experienced in procuring teachers, from the imperfect system of veterinary education followed out for the past; but a college in Dublin would undoubtedly give an impulse to the study of the science of Comparative Pathology—would attract more to the profession to practice as veterinarians in Ireland, and would greatly strengthen the veterinary profession.

On various occasions my advice as to the establishment of an Irish College has been sought; and during the past week Professor Cameron of Dublin has favored us by a visit, to ascertain the best means of accomplishing this object. I believe that, in accordance with suggestions of my own, the young men devoting themselves with great assiduity to their studies during the forthcoming year, may look forward to compete for positions which will be awarded according to merit after a most rigid test.

The New Veterinary College is young in years, but, thanks to many favorable circumstances, it is sound in foundation, and is already fairly launched in an independent path of progress, in which it can with pleasure contemplate the co-operation of another institution, started with young and vigorous blood, to bear up in the hard race for simple sustenance in which it will have to run.

In my introductory lecture, in 1858, I mentioned how scantily Scotland, but more particularly Ireland, was supplied with veterinary surgeons. What a contrast when compared to the German States, in which our profession stands higher, as being more learned, than in any other part of Europe! There are colleges in Berlin, Dresden, Vienna, Wurtemberg, Munich, Carlsruhe, besides other professors of veterinary science in the different universities. All prosper; and we find one veterinary surgeon for every forty or fifty square miles of surface. Ireland should, therefore, have a veterinary college; but I wish the promoters of such an institution in Dublin to know that it is not a simple money question; and, unless the right men are secured at first, no amount of money can accomplish the worthy object they have in view.

I am particularly desirous to acquaint all here of the projected school, for this one reason amongst others, that intelligent young men, devoting themselves to the veterinary professsion, with a serious determination to become thor-

oughly proficient, can look forward to many opportunities for engaging as teachers. Great changes must occur in a very few years more, and for truly able men, whose ambition has a certain limit, no profession offers a fairer prospect of success. It is true that he cannot look forward, like the medical man, to the prospect of a baronetcy, or, like a lawyer, to sit on the woolsack; but he can hope for as much honest gratification as an earnest worker in a most useful calling as any person need reasonably covet.

I know of no greater reward than that incidental to the conscientious discharge of professional duties; and the zealous teacher certainly experiences as large a share of this class of enjoyment as any other person. There are, however, many ways in which the straightforward dealings of a professional man are rewarded, and the veterinary surgeon is placed, perhaps in a more delicate position, between persons of conflicting interests, than the number of any other profession. I need scarcely say I am alluding to many circumstances under which the veterinarian becomes a professional arbitrator—an adviser in the most delicate of all speculations, the purchase of a horse—a peace-maker, if possible, between men of the most opposite classes, some standing on their dignity, others keenly enjoying an intrigue, and all, perhaps, unreasonable, because not capable of fully understanding the nature of the real causes which create doubts and disputes.

It is often a thankless task to examine a horse as to soundness. A purchaser has found what he has been seeking for months perhaps; acting cautiously in horse transactions, and probably asked an exhorbitant price for the object of his choice, he desires to consult the veterinary surgeon. The horse is rejected, the purchaser is disappointed, and the dealer sadly displeased. An inclination on both sides to think the veterinary surgeon may be a little too strict, induces departures from his advice, and, in the course of time, when unsoundness is very manifest, appeal to another professional man, and this often leads to a long and expensive lawsuit.

The veterinary surgeon who is most skillful and conscientious in detecting unsoundness, is the one who necessarily experiences the greatest delicacy in these matters, and who meets with most severe opposition on the part of those who care not to be scrupulously honest. The motto of such persons in the horse trade is, "Make money honestly if you can, but, at all events, make money." As the Roman satirist says, *Rem facias, bene si possis; quocumque modo rem.* It so happens that live-stock is the most precarious of all stock-in-trade. The nature of the article sold is invariably the subject of grave suspicion, and persons are not content until they have discovered some flaw. There are usually dozens of persons prepared to express their opinion on the subject; and every one who has frequented a stable any number of years is recognised as a qualified judge in horse matters. It is very clear that the veterinary surgeon has, as much as any professional man, full scope for an honorable, discriminating, prudent, and skilful exercise of his own judgment. Amongst the relations of veterinary to social science, I would class this as the relation of veterinary science to the science of moral duty. The patience of the professsional man is severely tried in this branch of his calling. He is sure to displease some one; and when temptation is yielded to—a time-serving policy being adopted—it is often from a desire to serve the individual who has most in his power, or who, on the plea of friendship, claims to be dealt leniently with.

I must honestly aver, that since I have established the new Veterinary College, I have as much reason to feel satisfied with the discharge of this part of our duties as any other, though a firm and consistent line of conduct has met with the most determined opposition from many who fancy we might overlook small things, and declare animals sound or unsound, rather as it suits the circumstance than as it agrees with the facts before us in each case.

I purposely allude to this subject at some length to-day, because our experience is of some value to the veterinarian who commences practice. When formerly in practice elsewhere, I did not meet with the unsatisfactory and underhand opposition which I have met here; but in the city of Edinburgh, whether I pronounce a horse sound or unsound, several opinions diametrically opposite to mine are immediately obtained. Of this I am certain, that it is not a difference of professional judgment so much as an unworthy difference arising from rivalry, inasmuch as the most obvious cases of unsoundness have passed muster after receiving my unfavorable verdict. I have the greatest satisfaction of being able to prove, in every instance that I have yet traced, that I have not erred in judgment; and I may allude to two or three interesting cases of this description.

In the very earliest days of the College a horse was brought to me to be examined. I at once rejected him as bad roarer. My advice was sought by an intelligent purchaser, who, having tried the horse, liked him because he was very quiet and steady. He at once stated to the vendor that I had rejected the horse, whereupon another veterinary surgeon was consulted, and pronounced the animal sound. Hesitating whether to buy or not, my client waited a day or two, when the animal was set up to auction, and, evidently by means well known in the horse-trade a keen bidding was started, and the animal was knocked down, to my friend, for £45. The horse was taken to the country, proved to be a roarer, and it was then discovered that this precious gem was a cast-off trooper which had realized £7 at the hammer not long previously.

The second case was one of peculiar interest, and it has been only within the last fortnight that I have obtained decided testimony that my father's opinion, who first examined the horse, and in whose opinion I subsequently concurred, was perfectly correct. A baronet honoured us by reference on the occasion of purchasing a pair of horses. One my father found a year younger than he was pronounced to be, and the other, a five-year-old horse, to have defective hocks, particularly the near one, and the defect chiefly consisted in slight enlargement in the seat of well-known disease, "spavin," with want of elasticity in the movements of the joint. I unhesitatingly condemned him for spavin. The hon. baronet stood by our opinion, and a very handsome chance for the dealer was lost. I cannot precisely say how many veterinary surgeons immediately declared this animal sound; but as good fortune would have it, the animal took ill shortly after and died. The hocks were boiled, and the bones kept, to be used in testimony against my father and myself. The horse-dealer positively refused that we should examine any more horses in his stable. This threat had been exercised before, and we were quite indifferent about the matter. Time rolled on, and during the last month an eminent veterinarian from the south of England told me that he had been conducted to a horse-dealer's yard, to be shown some hock bones which belonged to a horse we had, according to a veterinary surgeon's opinion, improperly condemned for spavin; but he found that we were perfectly correct. Another veterinary surgeon afterwards confirmed this opinion, and last week, on the occasion of my being requested to examine a horse I was told that I had erred before, and should not examine the animal in question. During the conversation the dealer volunteered to show me the bones, and I declared myself prepared at once to avow error, in the event of proof being afforded me, that we had erred. It is remarkable and almost incredible, that both the hocks are diseased. Slightly, it is true, but even extending to roughness of the joint surfaces, as well as decided enlargement of the ridge on the cuneiform bones. It is true, that in a young horse, with slight spavin of the hock joint, the soft tissues alone might have been affected; but there is here positive deposition of bone, and unmistakable signs of disease of some standing. Gentlemen, it is perfectly possible for any one to err, but so careful are we, and we hope at all times so impartial, that I repeat we look back with great satisfaction to the way in which we have worked through this very delicate part of our professional duties. I state this in vindication of the practice and the principles of the New Veterinary College. I might multiply instances, but they are all of this class, and in two cases in which a lawsuit arose, and in which we had a decided proof in opposition to the result of the trial, after-experience confirms the correctness of our judgment. Fortunately, in the large majority of cases in which a decided opinion has been expressed, the verdict has been on our side; though in all law cases it is our rule to act as simple witnesses, and not, as is frequently done by scientific witnesses, to constitute ourselves advocates for the side on which we may happen to be subpœned.

But, gentlemen, though a fearless and honest course has unfortunately placed us in antagonism with many, I must say the soundness of our policy is proved by the best of all tests, and that is the degree of success in practice; and month after month has it increased, exceeding our most sanguine expectations.

We confidently look forward to the future. Beyond the small influence which I can exert for the honor and prosperity of our new Institution, there will be the combined influence of a body of our students, who will ever learn, we hope, from the lectures in the New Veterinary College, that their profession is a noble and difficult one, and that with clear heads they must combine high principle, the sure and only pioneer in the business of life.

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

(*Continued from last volume, Page* 506.)

[The publication of a condensation of these official reports has from a variety of circumstances been unavoidably delayed; we now proceed with the abstract, from the No. of October 1st.—Ed.]

DURHAM EAST.

County Society.—Fifty-six members; amount of subscriptions, $61; balance from 1858, $71 62; deposited by Township Societies, $287; Government grant, $479 98; received from Hope Branch Society in aid of exhibition, $250; entrance fees at exhibition, $269 87; total receipts, $1419 67. Paid Towhship Societies, $574; paid in premiums, $578 50; expenses and sundries, $137 41; balance in Treasurer's hands, $129 77.

Extract from Report.

Your Directors, with the assistance of a balance, over from last year, were able to offer as large premiums as usual for competition at the Fall Show.

The sum of ten pounds was voted to the Township of Hope Branch Society to assist in getting up a Spring Show of Horses. On

the day of Exhibition few were on the ground, and those shown were declared by the Judges not adapted to this section of country. Your Directors feel that a great necessity exists for improving the breed of horses in this section of the Province, and would urge members to give the subject most careful and serious consideration.

In the spring a communication was received from the Board of Agriculture, informing your Directors that the Board had a quantity of superior flax seed on hand, which they had taken great pains to secure, for seed, and offering it for sale to the Society. Six bushels were purchased, and, although offered at cost, and widely advertized, only about three bushels were disposed of to members.

The Fall Show of the Society, held in October last, was not equal to its predecessor. The number of entries was not so great, and the falling off was general, not confined to any particular class. The out-door exhibition was small. The number of horses, cattle, sheep, and swine, being below what was expected, while the display of agricultural implements was comparatively even less. In the vegetable and grain department the show was excellent; the wheat and oats being, perhaps, superior to any ever before grown in this riding, while the potatoes, turnips, beets, carrots, cabbage, &c., were equally creditable.

TOWNSHIP BRANCHES.

CAVAN.—Fifty-four members; amount of subscription, $54; balance from previous year, $34 80; share of public grant, $54; fees, $6; total receipts, $148 80. Paid in premiums at Spring and Fall Show, $101; expenses, $33 85; balance in Treasurer's hands, $13 95.

HOPE.—One hundred and sixty-four members; amount of subscription, $164 50; balance from previous year, $132 10; share of public grant, $163; total receipts, $459 60. Paid Treasurer of County Society for purposes of joint exhibition, &c., $274; paid for copies of *Agriculturist* for members, $75; incidental expenses, $35 60; balance in Treasurer's hands, $75.

Extract from Report.

Your Directors have started a Club in the Township for the discussion of subjects connected with Agriculture, and they are of opinion that much good would result if farmers would more generally attend its meetings.

Your Directors appropriated $250 towards holding a joint exhibition with the County Society, and believe the money better expended than if they had held a separate exhibition.

WEST DURHAM.

COUNTY SOCIETY.—Eighty-seven members; amount of subscription, $87; balance on hand from previous account, $25.96; deposited by Township societies, $271; Legislative grant, $478.98; total receipts, $862.94. Amount paid Township societies, $589; paid in premiums, $292.50; expenses, &c., $32.-10; balance due Treasurer, $50.66.

Extracts from Report.

Your Directors have great pleasure in making known the success of the Fall Show. We have not upon any previous occasion had such a display of stock and manufactures, nor yet so many improvements in the various departments.

There were in all 479 entries, being an increase over the past year of 107. The principle increase being in horses, cattle, sheep, domestic manufactures, agricultural implements and dairy products.

Your directors cannot pass over the exhibition without drawing attention to its principle features and good results. In order to show and compare these improvements, we would require to look into the records of past exhibitions, and to times when agriculture was at a very low ebb in this County.

The materials out of which this society was formed are very old. It was first formed at a time when no Legislative grant was received; its existence depended entirely upon the energy of its individual members; it was formed for mutual benefit. Their stocks and seeds had so much deteriorated by constant combinations and sowings, that they required to get something new to infuse fresh vigor; they procured fresh seeds, stock, and implements; they did not at this time award prizes, but upon the 20th day of January, 1831, a society was regularly organized, under the provisions of Legislature, passed in March, 1830. This wise enactment came very opportunely to the assistance of those pioneers of agricultural societies. The very

first step taken was to procure two imported Durham bulls for the special use of the members. It happened, fortunately for the society at this time, that an English gentleman of some capital settled in the County. He brought with him a number of very superior rams and ewes of the Leicester breed; these were perhaps among the first direct importations of sheep that came to the country; a few years showed the beneficial effects of them. Although not under the control of the society, yet several individual members of it, had very good stallions. By this time the society had its annual shows both spring and fall, besides its ploughing matches. The next step at improvement, was the purchasing of and presenting to the members, a copy of Hind's Science of Agriculture, the object being to throw some light upon the chemical nature of soils, so that improvements in culture should be gone into. It also offered high premiums to mechanics for improvement in and introduction of new and labor-saving machines, and those have been continued by the society up to the present time. Thus has this society been going on step by step in improvement each successive year; suggesting something new, purchasing and distributing (at cost price) new and suitable varieties of fall and spring wheat, clover seed, gypsum, plaster, &c., until we have arrived at the state of progress which we enjoy.

The whole of these improvements, whether in our stock, mode of culture, domestic utensils, the economic arrangement of our barns, barn-yards and outbuildings, the proper management and application of manures, the housing and feeding of cattle, and even the luxuries of life which we enjoy, are all traceable back and through this society, which had its origin more than a quarter of a century ago.

We can now look back with feelings of pleasure upon those days, although they were not days of ease and enjoyment, but hard toil. Man did in those times, verily eat his bread by the sweat of his brow, for the old adage of "no work, no meat," would have soon been confirmed.

If we can look back and observe the amount of good done, under circumstances of hardship and difficulties, how much more then can now be accomplished when we have none of these things to contend against. We have now wealth, experience, time and talent, at our disposal; are we properly applying these? We fear many are not; and against whom we hold up a finger of warning. We will make our remarks general, let those to whom they will apply think of them. We said we fear not; the too prosperous times which we have for some time enjoyed, the very high prices attainable for our produce, especially wheat, have blinded our eyes. We have been too well satisfied with past and present prosperity, without casting even a passing thought on future evils.

Wheat has for some time commanded a high price, higher in proportion than any other article of produce. The consequence has been for some years the whole attention has been turned to the raising of it. Wheat after wheat, wheat after wheat, every field is wheat; no rest for the soil, nor replenishing of the nrcessary productive ingredients. No, every spark of life which it possessed has been sucked out of it, until Nature has cried out, enough, by not yielding her usual bountiful supplies.

We agriculturists have received a check; an all-wise Providence has interposed His hand by sending a blight, a plague, cutting down our usual fair fields by blight, rust, and myriads of the midge fly; we are thereby compelled, whether willing or not, to yield our land that rest which under the present system pursued, it requires.

The question naturally arises, what is to be done to get rid of this evil?

We would say pursue a regular system of rotation of crops. Supply the land by manure and proper cultivation, with the nutriment which has been extracted from it, and trust to Providence for the rest. The system which we would recommend may in another part of this report be treated upon.

One of the greatest enemies which the farmer has to contend against is the rust. Volumes have been written upon this subject, without effecting a cure; hundreds more may be written with a like result. We have little faith in those all-cures of patent medicine vendors, dispensed under the pretence of remedies for the blight. We pretend to give a thorough cure for this without any quackery, and it is in the power of every individual to carry out our suggestions. They are the result of observation, and every farmer is as well acquainted as we are with the facts, and upon reflection, will bear us out.

We say then, the effectual cure for *rust* is to *change your seed oftener*. We do not say that merely doing this from one farm to another in our own locality—although that should be done oftener—nor yet from one part of the Province to another—that also has its results—but we mean from one *climate to another*. That seeds will run out if constantly sown, has been verified, and therefore requires no discussion to prove it.

The facts which have come under our observation are these: Every farmer of twenty years standing we speak of this country, knows of the great blessing bestowed upon this Province by the introduction of the variety of wheat known as Siberian. Previous to its being introduced, a kind was used which was almost certain to be effected by the rust; many a field which looked bright and promising, would be, in one day, thoroughly blighted. This new variety was sown and stood the test; for several years rust was not known. The conclusion come to was that it was a variety which was not only prolific, but that the rust could not affect it. But bye and bye this also was injured, until at last it proved a complete failure. A new variety, *Black Sea*, was introduced, which had every prospect, like its predecessor, of withstanding the blight; but, like it, it failed. Yet another variety, *Club*, was introduced, which is passing through the same ordeal, and, in many localities, with like results. When this last variety was first introduced, 12 years ago, so white and plump was it that a wheat merchant bought some of it for fall wheat. We have now another variety, *Fife*. We have not heard until lately that this variety was affected, but yet it has been, though not to the same extent; for the two kinds, Club and Fife, have been sown in the same field, when the former would be rusted, and the other not. We have spoken only of the spring varieties, as they have been more marked; we might trace like results in the Fall. Now, what deductions do we draw from this? We have seen that all new varieties have for a time withstood the effects of rust; but afterwards become as much injured as their predecessors, and this has not been in consequence of the season being more favorable for the one than the other, nor yet the location of and difference in quality of soil, for they have been sown in the same field, and at the same time. We say that if a new variety of wheat was introduced at least every five or six years, that Canada would not have to complain of the total failure of her crops, through the effects of rust. Another feature in connection with this, and which has been sparingly if at all tried, is draining. This important matter cannot be too often brought before our eyes. There are few but will acknowledge its advantages; but they lack the courage to test it. All kinds of land require it more or less.

Your Directors are happy to say that through the kind interposition of Providence, an exceedingly bountiful harvest has been the reward of the farmer's labor. The crops this year have not been seriously attacked by the many diseases and blights to which they the occasionally subject. We know of very few instances where the midge has injured the crops this year; the consequence is, that we have more than an average. We must not think that we have got rid of this small but yet not despicable enemy because we do not see so much of his work this year; we believe the temperature of the season has been a great means of preventing his depredations.

We cannot too highly recommend to your notice the observations and remarks of that distinguished agriculturist, John Wade, Esq., whose opinions on the midge will be found in the September number of the *Agriculturist*, and as the season for spring wheat sowing will soon come round, we recommend them as containing important practical information. Your directors, in speaking of the fall show, would say a very pleasing feature in connection therewith, was the great number of animals and articles that had been at the Provincial Exhibitions. We here thank those energetic individuals for having this country so well represented; and we are also happy that the results were so favorable to themselves; first upon our list stand the class of horses, in which the names of Trull, Simpson, Arnot, and others, are well known as successful competitors.

Our cattle also stand very high, first from the stock of Mr. Wade, and latterly from various good herds. The Durham cattle of the Hon. John Simpson, Messrs. Joness and Bellwood, have upon several occasions taken the first and second prizes. Last year Mr. Joness, and this year Mr. Bellwood, have bought new and very superior Durham bulls.

In Devons, Mr. Davey, Mr. Richard Allen, and Mr. Courtice, stand high; the two latter gentlemen having lately imported some animals of this breed from England. Our improved or grade cows are very good, many of them, except in name, superior in point of size and feeding qualities to the pure breeds.

Our Sheep we need scarcely say anything about; they are well known. We speak confidently when we say that this County stands second to none for this class of animals, as the Provincial prize list can testify. In Agricultural Implements, we stand unrivalled. There is no county in the Province that enjoys the same advantages that we do in respect to implements. We not only have these at our own door, thereby yearly saving a great amount of freight and inconvenience, which we were formerly put to by getting them from the United States, but they are of the best kinds. Your Directors this year departed from the usual method of judging these machines. They were tested in the field, giving the prizes to those only which merited it by actual work, the results of which were highly satisfactory, and will prove highly beneficial.

Dairy products have this year been fully represented, both in quantity and quality.

In grain we are happy to say that this County has again carried off the Canada Company's prize for fall wheat at the Provincial Exhibition, and also one prize for spring wheat.

Fruit—In this class we had a great display, some of which was of very superior kinds, there were two first prizes awarded.

Before drawing this, perhaps too lengthened report to a close, it has been thought expedient, at the request of the Provincial Association, for the benefit of those who may not be acquainted with this important locality, that a little should be said upon the general features of it, with the improvements made.

The Electoral Division of the West Riding of Durham is composed of three Townships, forming two sides of a square covering an area of 310 miles, and having an aggregate of 193,200 acres; when the census was taken in 1842 its population was 7,707, and lands cultivated, 50,268 acres; it now has a population of 25,000, and lands cultivated, 120,000 acres; the assessed value, according to equalized revised assessment of last year, $4,050,000; the actual returns, however, being $82,931 above that.

The Township of Darlington and Clarke, form the front, bordering upon Lake Ontario, with the Township of Cartwright in the rear of Darlington. The geographical position and the salubrity of the climate and richness of soil have long pointed this County out as a desirable situation for settlement. It is exceedingly easy of access either by water, railroad, or internal communication by gravel roads.

The physical features of the country are not marked by any peculiarity; it rolls a little from east to west, but from south to north it rises gradually for a distance of twelve miles to a pine ridge, and then gradually dips to the north.

There are many large living streams of water, but none of them of sufficient size to be called a river; upon these are to be found many superior flouring and saw mills. The only large sheet of water is that of Scugog Lake, situated in the Township of Cartwright. Although it is called, and has every characteristic of a lake, yet it is really only a mill-dam for the Town of Lindsay. It covers nearly 20,000 acres, (and we would here warn any one against buying land in this township beyond the seventh concession, unless from personal inspection, for after purchase he may find it covered with water, as we have known such cases), it is navigable, a small steamer running upon it which is employed in carrying lumber, and taking excursion parties to the back lakes. There is an island in the centre of it, a portion of which belongs to a tribe of Indians, who employ their time in hunting and fishing, being too lazy to cultivate their lands.

Soil—The general character of the soil in each of the townships varies, although upon the whole it may be classed as nearly the same. There are in each the stiff clay, the rich alluvial, and the light sandy; but in each, one kind predominates over the other: in Darlington, clay; Clarke, loamy; and Cartwright, light sandy soil.

For agricultural purposes this county is not surpassed. All kinds of grain can be raised, but particular attention is turned to the raising of fall wheat; in this, perhaps, upon a whole it stands preeminent. The farfarmed Genesee Valley of New York State cannot equal it in point of quantity or quality. The greater portion of our wheat finds its way to the United States side of Lake Ontario, out of which they manufacture their best brands of flour; the consequence is that they receive the character of raising good wheat, while at

the same time they receive their supplies from Canada. This will be the case until we have greater facilities for manufacturing.

The varieties of fall wheat principally sown is the Soule's ; there is no kind that we are aware of that suits as well as this. It is uniform in color, yields well, and commands the highest price for manufacturing The average yield of this year is twenty-five bushels per acre. Were we to take in a certain range, say the whole of the front and ten miles back, the average yield would be not less than thirty bushels, many fields ranging as high as forty-five bushels, while a common yield has been forty bushels. Spring wheat would have rather the best yield, say an average of about thirty bushels. The kinds sown are Club and Fife ; the quantity sown to the acre is generally two bushels.

Peas have been a good crop and free from worms, the yield would be thirty bushels ; the quantity sown from two to three bushels per acre, according to variety. The best kinds are marrow fat and golden vine; a new variety —white with black eye—commands the highest price in England. We would advise all those who can procure the seed, to sow them, they yield well.

Oats—A good crop; average forty bushels; best varieties, black Tartar and white potato ; sow three bushels to the acre.

Barley—The high prices last year, with the uncertainty of the wheat crop, induced many to sow ; there has upon this account been more raised than usual, the average would be twenty-five bushels.

Rye and Corn—Very little grown.

Of Turnips, Carrots, and Mangel Wurzel there has been a larger than usual quantity sown this year. They have latterly been upon the increase. Farmers are beginning to see the propriety of rai-ing these roots for the benefit of their stock, many of our best having from seven to ten acres. For milk cows, mangel wurzel is preferable ; it imparts a richness to the milk not to be found in the others. The average yield of root crops would be 700 bushels per acre; the varieties sown are, Laing's and Skirving's improved purple top and yellow bottom Swede ; long orange carrot, and long red mangel wurzel.

Potatos were a very good crop, notwithstanding some having been cut down with the frost late in the spring, and again nipped early in the fall ; the average yield would be 100 bushels. The best varieties are cups, and farmer's delights ; the latter yield well.

Clover and timothy hay a very good crop, but rather below the average, the season being very dry ; the average 1½ tons.

Fruit is now very plentiful ; very few farms but what have several acres of orchard bearing fruit. Formerly we had our supply of young trees from the States, but now we have four nurseries in the county. J. P. Lovekin carries on an extensive business in this way, supplying many counties throughout the Province. Apples are the principal fruit, but Pears, Plums, Cherries and occasionally Peaches and even Grapes are raised in the open air. Of late the plums have been destroyed by a blight which has come upon the trees.

From the average of crops we now turn to the value of land. The two front townships, —Darlington and Clarke—to the depth of the sixth concession, may be valued at sixty dollars per acre, and from that to the rear of the township at thirty ; that of Cartwright about twenty dollars. These averages are laid down upon actual sales, with all the necessary improvements of fencing and buildings. There are many farms however, that could not be bought even at $200 per acre, but we do not presume to call these the value for agricultural purposes, nor do we include them in the average ; but farms of one hundred acres in good localities can be had at our outside average figure.

The mode of cropping here is varied, every one apparently following out the bent of his own inclination. That of our most successful farmers, and whose example after a time will be copied, is, fall wheat upon naked fallow, oats, green crops, (including peas, as such), spring wheat seeded down; sometimes one and sometimes two crops of hay, according to circumstances ; if one crop is taken, then two years' pasture, and if two years' hay then one year pasture. Where spring wheat only is sown the rotation is as follows: Peas after green sward, oats, green crops, wheat seeded down, with hay and pasture as in the fall wheat system.

Wages—The rate of wages for farm servants by the year is from $130 to $160; other hands are only employed during hay and wheat harvest, in the former getting $1, and the latter $1.25 per day, and if for draining or other work, not at these times, 75c., all with

board. Mechanics generally, unless by the job, work by the day, and get from $1 to $1.25, according to the nature of the work; they boarding themselves at these rates; but if hired by the month, $16 is the usual rate, with board.

Manufactures—As before stated, few counties are better situated than this for manufactures, more particularly agricultural implements. If we want the axe to chop, the plough, either double or single board, Scotch or Canadian, iron or wooden sub soil or surface, we have them; the harrows or drags, iron or wood, the cultivator, horse rake, mowing and reaping machines, threshing machines, &c. The establishment of Mr. Massey, of Newcastle stands very high. He turns out annually over $20,000 worth in machines of various kinds; perhaps his latest improvement upon his combined mower and reaper is not equalled. At a recent trial of mowing in clover, its cut being 60 inches, its draft was an average of 325 lbs. These can be had for $120. Of woollen factories we have but two, and they of a local nature, carding and weaving for domestic use; a good deal of home made woollen goods being still used.

Flour—There are twenty-two mills for flouring, better than half of these are for merchant work only, the rest for custom, and export. There are several of these which stand very high, two particularly noted, the Bowmanville and Newcastle; the former took a medal at the Exposition in London 1851; the latter upon several occasions, has taken the first prize at the Provincial Exhibitions. The exports for 1858 were valued at $300,000 and were chiefly composed of wheat, flour and lumber.

Cattle—The cattle of this county have improved very much. Native are now scarcely known; the principal kinds are pure breds Durhams and Devons, and others improved from these. A few years ago there were none fattened for export, but latterly attention has been turned more to that branch of industry. To follow it out properly, it must prove a source of profit. At present the demand is good, and very good prices obtained. We have seen several hundred head of cattle taken from this county this year, and where they have been bought by weight, $6 per 100 lbs. was the common price, but when in good condition $7 was paid. We think the Durhams are the best for feeding purposes; these and Devons are the only kinds we have in the county, and therefore cannot state their relative qualities against others such as Galloways, Ayrshires, &c. The profit of feeding may be illustrated in one example. A cross Durham cow, giving milk part of the summer, was put up in fall, fed, and sold, within three months. She was fed three bushels of turnips per day, without any hay, and during the whole time she got in small quantities two and a-half bushels peas; thus she ate say 260 bushels turnips and 2½ bushels peas, the price realized was $57, or according to weight, $7 per hundred pounds.

Sheep.—In these we are not surpassed, there are a number of sheep breeders here, who have from time to time imported fresh blood to keep up their stocks; the principal kinds are the Leicester, Southdown, and Cheviot. We think the most profitable kinds would be a cross between the Leicester and Cheviot. In these will be found weight of carcass, fineness of wool, and quality of mutton. We think that if more attention were paid to sheep raising, they would pay better than any other kinds of live stock. There is little trouble with them, while at the same time they yield a good return.

Wool.—In this article of commerce there is much neglect. We know that thousands of dollars are lost annually by not paying proper attention in securing it. From the improper and dirty manner in which it is brought to market, it does not bring within six-pence per pound of its real value. Farmers may and will not believe this, but we speak from experience in the matter, having been in the wool trade more or less for the past 16 years.

The quality of our wool, as a whole, is much finer than that of England; but little, if any, ever gets to that country. It is generally bought for the American market. The buyers from that quarter put a regular price upon Canadian wool, not according to quality, but all at one price, the only distinction being washed and unwashed. The agents employed get a certain per centage per pound, therefore in purchasing they make no distinction in quality; the per centage to them on a pound of dirt is equal to a pound of wool, there is, therefore, a premium held out for bringing it in without bestowing the least care upon it, but all this tends to depreciate the sample. There are very few that have got sufficiently large flocks to make this a subject of enquiry. Large lots always bring a higher price than

small ones, because there is much less trouble with them.

We presume to offer a suggestion, which if carried out will prove remunerative. Farmers of a township should club together, employ a person who understands the packing and assorting the qualities. All the fleeces should be separated according to their fineness, and other general qualities, having each lot as uniform in color as possible, and then properly packed. This must be carefully done, for when taken to market a certain number of bags out of each lot are ripped open, and these constitute the sample for the rest of the lot; if an inferior fleece is put in, it will be just so much off the price of the lot. Uniformity then is a great point, and that depends much upon the farmer in washing and shearing it. It is of the greatest importance to have the fleeces well washed, so that the wool may be as bright in color as possible. It should at all times be washed on the back of the sheep. After they are washed, they should be at once driven into the pasture field, or in some clean place, so that the wool may not get mixed with chaff, burs or leaves. The tags must be carefully taken off, and when the fleece is rolled up, part of it should not be twisted into a rope to tie it, for that is the means of matting it together: it should be rolled up carefully and tied with a cord. Wool put up in this way, employing a proper person, will bring from 50 to 60 cents, while under the process generally used 25 to 30 cents is the price. We leave this to the consideration of farmers, let them at any of their meetings discuss this and kindred subjects; they will find it to their advantage to do so, and we would here advise, that upon these occasions, the mechanic and merchant be not excluded from taking part in their discussions; these two classes of individuals, from their position and intercourse of business, can at many times impart very valuble information to the agriculturist. Were we to press home our remarks upon one particular more than another, it would be upon that of meeting more frequently and discussing subjects. Few but those who have had opportunities of attending, know the value of it. Farmers' clubs and associations should be started in every township in the Province—subjects touching upon improvements should be treated upon. How few farmers there are who bring the least particle of science to bear upon their vocation. They scout at the idea of book farming and the remarks of men of science. They turn their back upon you when you speak of the chemical analysis of the soil, and its various properties, but these old prejudices are now fast giving way.

In drawing our remarks to a conclusion, we cannot do so without referring more particularly to the means employed in bringing our Province into notice; and we have much pleasure in saying this has been accomplished through the aid of our Agricultual Societies, ably seconded by the support of Government. All civilized governments are aware that agriculture is quite indispensable to national prosperity. Hence, the degree of interest manifested in it by our Government. As before mentioned, as early as 1850 an Act was passed for the establishment and encouragement of Agricultural Societies, and as boundaries extend d, and circumstances required, new enactments have been passed for the fostering of these, which has been the means of stirring up a spirit of emulation for improvement in many a locality.

It would be impossible for us to enumerate the benefits resulting from our Provincial Agricultural association; these are incalculable. The first step taken in its formation was a bold one and worthy of its projectors; it has now been in operation 14 years, and all must acknowledge that through its agency this country has been elevated to the high position which she now holds as an agricultural one. Through its means, reports and essays have been written showing the resources of the province. High premiums have been offered for the most improved labor saving machines and implements; encouragement has been given for the importation of cattle and seeds, till now we stand second to none. May these improvements continue, each year shewing a progressive movement in the agriculture of our country.

TOWNSHIP BRANCHES.

CLARKE.—Seventy members; amount of subscription, $121; balance from previous years, $33; share of public grant, $80; total receipts, $234. Paid for copies of Agriculturist for members, $34; premiums, $51.25; paid County Treasurer, $121; expenses, $12.25; balance in Treasurer's hands, $15.50. Liabilities for prizes, &c., $26; assets, amount in County Treasurer's hands, $184.

Extract from Report.

Your Directors would call particular at-

tention to the Fall Wheat Seed Show. There is no work of our Society that flourishes better, or is more deserving of our countenance than this. We may toil ourselves to death in order to prepare the ground, but unless we are particular in the selection of seed, all our efforts will be utterly or nearly useless. Our Seed Show has now been in operation for five years, and during that time it has been steadily gaining in importance. Owing to the failure of the crops in some parts of our own and neighboring townships, hundreds of bushels have this year exchanged hands. As you are aware, one of the rules of the Society is, for all exhibitors to furnish a written statement of the manner of tillage. This we consider a very important point, for by this plan we can compare the different systems pursued, then observe the results. The intention of course is to make these known. Out of the various lots the same system seems to have been pursued except in one instance: all the crops have been on summer fallow except this one, which was on Pea fallow. Eight lots, of an average of $16\frac{1}{2}$ acres, each produced on an average $30\frac{1}{7}$ bushels to the acre, the highest being 40 bushels, while the lowest was 16 bushels (upon light sandy soil). The Pea fallow, $11\frac{1}{4}$ acres, 29 bushels to the acre.

The crops in this township this year may be safely counted over an average, few, if any of them, have been affected by the weevil; the rust has done some damage but not to the extent of last year; in the Spring there was much alarm felt about the grasshopper which had done so much damage last year, many prophecying that this year every green thing would be destroyed, the fence corners and stump roots were eagerly hunted for them, some reported having found bushels; but notwithstanding these prognostications and alarms, no harm was done.

The Township of Clarke is the eastern one of the west riding of the county of Durham, and covers an area of 72,000 acres; it is 45 miles to the east of Toronto and borders upon Lake Ontario; it has been partially settled upon the front from forty to fifty years, but it is only within the last twenty that settlement has become pretty general, and the last twelve have shewn great improvements. It is very easy of access, having two harbors and two railroad stations, Newcastle and Newton, at five miles distance from each other. For internal communication it has two good gravel roads, one running east and west, and one running south and north. It is well watered by first-rate living streams, upon which are many flouring and saw mills. Its export trade is very considerable. Taking the average returns for the past four years the exports are, per year, $130.518, principally in Wheat and Flour. The assessed value of the township, according to revised assessment, was $1,374,179.

Crops.—The average crops of Fall and Spring Wheat are this year nearly the same, we may state the average at 25 bushels per acre; many farms have as high as 40 bushels, while others may be as low as 15 bushels, but the crops have been very good. We can confidently say there is no township in the province that can surpass this for the raising of Fall Wheat; the land is peculiarly adapted for it; in 1855 one farmer, Mr. B. Bowen, had a return of 60 bushels per acre of Fall Wheat. We confidently believe that if farming were carried out to the extent of improvement as that of England and Scotland, that the yield of this country would be greater than either of the others."

[The Report here contains some interesting information in regard to the agricultural productions of the township, but which, being to a considerable extent a repetition of that given in the report of the county, is omitted. The report concludes:]

"Were we to speak of improvements made, we would say they have been very rapid. Unless in the very rear of the township, a log house is not known; they have all given way to large and commodious brick, frame, and stone. Farmers are now very well off, and after their toils of former times, they are now, at the decline of their days, inclined to take their rest, with every appearance of comfort. Twenty years ago there were few if any horses in the township; a yoke of oxen and an ox-cart, with some clean straw in the bottom of it for the benefit of the fair sex, was the only conveyance known. Now splendid covered carriagss, horses with shining coats, with silver mounted harness, are the fashion. Thirty years ago many had to go 20 miles to get their grists ground, and now they have mills at their own doors; fifteen years ago you could get cash for nothing but wheat, and if the old lady had the misfortune to have a headache and wanted a little *tea* you had to

take two bushels of your best wheat to pay for it, but now cash can be had for anything that the farmer raises. He can now get for his bushel of wheat two or three pounds of tea, and of a better kind too. We can scarcely calculate the changes that have taken place: fifteen years ago we had not a flouring mill worthy of the name, we have now over twenty. The same length of time ago, if we had the misfortune to break our plough point, we had to trudge off 15 miles to get a new one, and sometimes were considered particularly fortunate if we had not our journey for nothing; but now we have two extensive implement manufactories; fifteen years ago there was scarcely the chance of getting a common school education; now we can get a good education in our common schools, and if our sons or daughters wish to get a step higher they have the advantages of a Grammar School, or some private Academy where all the required accomplishments may be had.

DARLINGTON.—One hundred and thirty three members; subscription, $150; share of public grant, $176; receipts at show, $84: total received, $410. Paid balance due Treasurer from previous year, $85 55; paid for *Agriculturist*, $54; paid in premiums at spring and fall shows, $233.75; expenses, $68.24; balance in treasurer's hands, $6.46.

ELGIN.

COUNTY SOCIETY.—Fifty-five members amount of subscription, $55; balance on hand from previous year, $667.68; received from presidents of two township societies, $20; deposited by township societies, $483; legislative grant, $599.96; total receipts, $1824.64. Paid township societies, $843; premiums, $198.75; legal expenses, $50; other general expenses, $87.75; balance remaining in treasurer's hands, $645.14.

In 1860, this County, which had heretofore contained but one County Society, organized a Society for each Electoral Division, East and West Elgin, under the Act, 20 Vic. cap. 32.

Extract from Report.

The County of Elgin comprises seven Townships, or some 450,000 acres; and is daily increasing in wealth and population, and the development of agricultural skill; which fact is in a great measure attributable to the natural fertility and capabilities of the soil, and partly to the impetus and encouragement given to all agricultural pursuits for the past three or four years by this parent agricultural Society and its several branches throughout the different Townships.

The great disparity heretofore existing between the price of manual labour and agricultural produce has been a great drawback to all farming operations and improvements; but the introduction, lately, of reaping and mowing machines, and in fact, of all the improved manual labour-saving machines of the present age, on a large scale in this section of the country, has so reduced farm labourers and mechanics' wages, as to render farming an agreeable and profitable undertaking now a-days; and improved farms have consequently increased much in value. Some two years ago, when a good farm hand would during harvest time command from one dollar and a half to two dollars per diem, a 200 acre lot with house, barn, and driving sheds, and say 80 acres of clearance, could have been purchased in a good locality, convenient to markets, in this County, for about $28 per acre; whereas now, when farm hands can be hired for one-half the amount, the same farm would bring at least $40 per acre.

The soil is principally a rich loam, resting upon a heavy retentive stratum or subsoil, with here and there streaks or ridges of stiff clay. The surface is uneven or rolling, and consequently dry, but in some localities requires draining, and with moderate care and cultivation, all manner of root and grain crops grow luxuriantly. Wheat is, however, the staple crop, and some thousands of bushels are annually exported, but last year this crop suffered much both from the ravages of the midge and spring frost, say twenty-five per cent from the former cause, and at least thirty-five per cent from the latter, so that more than one half of the crop was destroyed in this way. The breadth sown with Wheat this year is very small in comparison with that of former years, and much of the land prepared will be sown with Spring Wheat.

Owing to the natural fertility of the soil, and an over-abundance of it, very few of our farmers as yet study the philosophy of tillage, or see the necessity of pursuing a regular system or rotation of crops, but exhaust the land by taking the same kind of crop year after year out of the same piece, and that too without supplying any kind of manure in return, while at the same time the barn yard

may be knee deep with muck of three or four years standing, which for want of removal is rotting away the sills of the surrounding buildings.

The present system of barn-yard management cannot be too strongly deprecated: our farmers generally locate their barns and outbuildings on a rising ground, so that the yards may be dry and the nasty washings run off, perhaps into the road or stream; by this much the greater part of the liquid excrements is lost, and, by suffering injurious fermentation, a large quantity of the organic gases escape, and the soluble and consequently most valuable portion of the manure is washed away by drenching rains. These evils every one familiar with farm management must have observed. The direct loss to the individual by such a reprehensible practice is great, while the indirect loss to the community is inestimable.

No farming can be profitable when the manure is thus shamefully wasted, and nothing is plainer than that the crops of the farm and the profits of the farmer are in direct proportion to the amount and value of the manure made on the farm. The great aim of the farmer in the management of barn yard manure should be, first, to preserve all the liquid; second, to keep up a slow fermentation, never letting the heap heat or ferment violently and thus throw off its ammonia; third, to prevent leaching during heavy rains and melting snows. Were these three conditions properly attended to, the value of the manure on most farms would be at least doubled.

There was a very visible improvement in the different breeds of horses, cattle, sheep, and hogs, exhibited at the several Township Agricultural Shows in this county during the past year, both as regards quantity and quality; and we find that the generality of our farmers are giving their particular attention to raising stock, and surely no country in the world is better adapted to the raising of cattle and sheep than this, where land is not only cheap and plentiful but of unequalled fertility, yielding rich natural grasses in great abundance.

This undoubted fertility of the soil for grazing purposes, the fine dry climate, the cheapness of land and the high price of labor all point to stock raising and wool growing as the most profitable department of farm economy in this Province. Therefore the improved breeds of cattle and sheep can be profitably introduced into this county, and it is gratifying to observe that some few of our enterprising fellow-farmers are making praiseworthy efforts to improve their breeds of cattle by importations from the United States and Europe.

The introduction of improved breeds of cattle has already added thousands of dollars to the wealth of this County; and though much has been done in this direction, there is still abundant room for future improvement. The great majority of cattle sent to market in this section of the country, though of a very inferior order, might be very profitably crossed with a Durham or Devon Bull. It is doubtless important to have both parents good, but in the case of ruminants the predominating influence of the male in determining the qualities of the progeny is so well ascertained, that the selection of the bull is a matter of prime importance. Judging from the number of well-bred bulls exhibited at our County Spring Show of last year, we should say that our farmers are aware of this, and at last waking up to the fact that it is quite as easy to breed good animals as poor ones; and that the cost of food for the one is no more than for the other, while the difference in the nett profit is amazing.

The Durhams and Devons have each their respective advocates here, but it is generally contended by all that the Durhams are the best breed for rapid feeding and early maturity, being perfect at three years old; and a cross between a Short Horn or Devon bull and a native cow is considered the most valuable for dairy purposes.

Much attention has of late years been bestowed on raising sheep and wool, and the improvement in the various breeds is quite apparent to all; flocks of pure Leicesters, South Downs and Merinos are to be met with in all quarters, while the long-legged, short-wooled, ill-shaped Canadian sheep (like the Aborigines of the country) are fast disappearing and giving place to the now favored breeds. A cross between the Leicester and South Down is becoming a general favorite here, and appears to be a hardier sheep, producing more wool and mutton than either of its progenitors. The climate and soil are admirably adapted to sheep raising, and although large numbers are annually exported to supply the increased demand of the United States

markets, yet the stock on hand suffers no diminution, but on the contrary, is rapidly increasing, and the wool crop of this county last season was more than double that of any former year.

The management of Hogs is shamefully neglected, both as regards breeding and feeding, and the present system of raising pork is rather a loosing game. Hogs are in most instances allowed to wander at large in search of food the whole year round, until shut up in the pen to fat. Now the same rule applies to feeding and raising hogs to advantage as to cattle, viz: It is just as easy to raise good hogs as bad ones, and the food for the one costs no more than for the other; but who can estimate the difference in the profit? It is encouraging, however, to know that we have some enterprising men in our midst who seem thoroughly to understand the economy of raising pork, and who have, at considerable trouble and expense, introduced both well-bred Berkshire and Yorkshire hogs to this section of the province, so that any farmer at all anxious to improve his breed of hogs can now do so at a very trifling cost; and we hope ere long to see a great change in this department of the farm management.

Miscellaneous.

Sagacity of a Dog.—From an English Journal published several years ago we cut the following remarkable instance of the sagacity of a dog, and although some of our readers may have seen it before, it is well worth re-publishing:

About eight months ago, a gentleman belonging to this city embarked at Port Philip for Scotland. In the bustle and confusion of preparing for so long a voyage, a favorite dog disappeared about a couple of days before the vessel in which he returned left Port Philip; and as all the inquiry he was able to make turned out to be fruitless, he was under the necessity of leaving his four footed friend behind him. He arrived in Edinburgh about two months ago, and wonderful to tell, within the last three weeks was surprised by a visit from the animal he had left in Port Philip about eight months before. Upon inquiry it turns out that the dog had gone on board of a ship on the eve of sailing for London; that once aboard, he resolutely refused to be put ashore, and by dint of sheer resolution obtained a passage. On his arrival in London, it is ascertained that he visited the lodgings formerly occupied by his master, and failing in discovering the object of his search, immediately disappeared, and was not again heard of until his arrival in Edinburgh. Familiar as we are with instances of the affection and sagacity of the dog, this is perhaps the most extraordinary example on record. His going on board an English ship many thousand miles from home—his refusal to quit it—his visit to the former lodgings of his master on his arrival in London—and the journey from London to Edinburgh—rank the subject of this brief notice as one of the most wonderful animals of his species. The gentleman to whom he belongs is well known in Edinburgh, and is the son of a gentleman who, within the last twenty years, has filled various offices of civic dignity.

The Lesson of the Leaf.—We men, sometimes, in what we presume to be humility, compare ourselves with leaves; but we have as yet no right to do so. The leaves may well scorn the comparison. We who live for ourselves, and neither know how to use nor keep the work of past time, may humbly learn—as from the ant, foresight—from the leaf, reverence. The power of every great people, as of every living tree, depends on its not effacing, but conforming and concluding, the labors of its ancestors. Looking back to the history of nations, we may date the beginning of their decline from the moment when they ceased to be reverent in heart and accumulative in hand and brain; from the moment when the redundant fruit of age hid in them the hollowness of heart, whence the simplicities of custom and sinews of tradition had withered away. Had men but guarded the righteous laws and protected the precious works of their fathers with half the industry they have given to change and to ravage, they would not now have been seeking vainly, in millennial visions and mechanic servitudes, the accomplishment of the promise made to them so long ago: "As the days of a tree are the days of my people, and mine elect shall long enjoy the work of their hands; they shall not labor in vain, nor bring forth for trouble; for they are the seed of the blessed of the Lord, and their offspring with them." This lesson we have to take from the leaf's life. One more we may receive from its death. If ever, in autumn, a pensiveness falls upon us as the leaves drift by in their fading may we not wisely look up in hope to their mighty monuments? Behold how fair, how far prolonged, in arch and aisle, the avenues of the valleys—the fringes of the hills! So stately—so eternal; the joy of man, the comfort of all living creatures, the glory of the earth—they are but the monuments of those poor leaves that flit faintly past us to die. Let them not pass without our understanding their last counsel and example: that we also, careless of monument by the grave, may build it in the world—monument by which men may be taught to remember, not where we died, but where we lived.—*Ruskin's Modern Painters.*

THE BRITTANY COW.—A correspondent of the N. Y. *Tribune*, writing from Philadelphia under date of Dec 4th, says: "An importation of a great agricultural wonder will be made here by one of our wealthy fancy farmers, in the spring. It is the Brittany cow, from France, a mere miniature creature, barely three feet high, docile as a cat, giving eight to ten quarts of rich milk daily, and consuming almost as little food as a goat This breed has recently been introduced into England, where it has excited the utmost wonder and admiration even from experienced breeders. As described to me, every citizen who boasts a garden of moderate size will be able to be his own milkman by simply tethering a Brittany cow on his grass plot.

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The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

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THE

Canadian Agriculturist,

OR

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OF UPPER CANADA.

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Management of Farmyard Manure.

The manufacture, preservation and economic application of farmyard manure, deservedly occupies a distinguished position in the agricultural practice of all countries, in which the improvement of husbandry is regarded as an object of national importance. Even in England, where, from a peculiar combination of circumstances, artificial manures, as they are called, can be readily obtained and are extensively employed, the farmer has to depend in a great degree on his "barnyard muck," the proper management of which has for many years received, and is still receiving, the most earnest attention both from practical and scientific men. Farmyard manure constitutes the "sheet anchor" of the Canadian farmer, as extra or artificial productions are too difficult to procure, or too costly in price to be, for the present, at least, extensively employed. Gypsum, ashes, and occasionally a little burnt carbonate of lime, crushed bones or guano, may be employed as special dressings, or in the form of a compost with earthy or partially decomposed vegetable matter, yet the farmer looks mainly to the excrements of his live stock, combined with straw to enable him to restore to the soil the greater portion of those ingredients which a course of cropping has removed.

Farmyard manure, however, varies very much in the degree of its fertilising power, from several causes; such as particularly the kind of food on which animals are fed, and the amount of skill and care that is taken in preserving and mixing their solid and liquid excrements with straw, and other substances which by fermentation produce a compost more or less rich in the food of plants. Animals liberally fed on hay, turnips, linseed, and grain, produce a manure exceedingly rich in nitrogen, and the various salts required by our cultivated crops. The farmer should pay during the process of the formation of his manure, particular attention to what may be termed the chemical action and changes to which the mass is at all times more or less subject, by fermentation and exposure; and that no unnecessary waste occur by its being too much exposed to the action of air and water. Eave-troughs, for instance, ought to be provided in all places where cattle are kept, and their manure exposed to the action of the weather. If this precaution be neglected, a large portion of the soluble salts will be washed out, and make their escape, as is too commonly seen, in the form of a dark brown liquid, flowing from the yards or heap over the lower levels of the adjoining ground, till it meets with a final exit in the water course of a neighbouring ravine. The amount of valuable manure that is thus annually lost baffles all attempts at calculation. In Europe the practice is gaining ground of keeping manure during the period of its formation, more or less completely under cover, thus preventing the washings occasioned by heavy falls of rain water. We have seen a few instances of this kind in Canada; and it is

no doubt an improved practice that is much needed and of great importance. But even here caution becomes necessary, lest by allowing dung too freely to ferment, without the requisite amount of moisture being present, a large amount of its manuring power be dissipated in the form of *volatile* products, instead of only *soluble* matter. Horse dung when kept dry and in large heaps, is peculiarly liable to ferment to such a degree as to render it a light, dry, and almost useless mass. The best plan, for general purposes, is to mix together the manure of the different kinds of animals kept on the farm; admitting as much air and moisture as experience shows to be necessary in accordance with atmospheric temperature, for sustaining the requisite amount of fermentation. The cold of our winters is usually too excessive to allow of rapid chemical changes taking place in manure, either in the yard or in the heap; but great waste often occurs during a thaw, or heavy rains, when much of the soluble salts is wasted in the way before described.

In proof of this waste the following experiment made by Professor Voelcker, chemist of the Royal Agricultural Society of England, will be deemed conclusive. He took several cart loads of dung from the stables of the cows, mixed them thoroughly, and analysed a portion, that he might be able to understand whatever changes might subsequently take place. The mass was then divided into several equal parts, each of which was treated differently from the others, and after some months analysed again. The result was, that the portion kept under shelter had lost scarcely anything, but that which was exposed to rain, &c., had lost two-thirds of its most valuable ingredients, potash, ammonia, and phosphoric acid. And that this immense loss was due to the washing of the rain, and not to evaporation, was proved by frequent examinations of the air immediately around those parts most likely to give off ammonia, the only one of the three ingredients named which is at all volatile; and also by the analysis of liquid which flowed from the heaps.

Farmyard manure exerts a double action in the soil; that is, it produces *both a mechanical and a chemical change*. Under the former agency we find it giving stability to light sandy soils, and making them more absorbent of moisture,—rendering tenacious clay soils more open and friable in their nature, and thereby admitting the freer passage of the rain and atmospheric air, as well as promoting the decomposition of these soils, and thereby rendering them more fertile. For dung to act mechanically in rendering the soil more open, and to overcome its tenacious character, it should be applied in what is termed its green state, that is not too much rotten. Ploughing deeply tenacious clays, incorporating with the soil a quantity of rough manure, tends to open their pores, so as more readily to admit air, and light, and heat, ameliorating agents of the greatest value. On soils, however, naturally light and porous, dung should be thoroughly decomposed before it is applied.

Farmyard manure exercises another group of influences of the greatest moment in the economy of vegetation in relation to the soil, which comes within what is designated *chemical action*. Here we have powers quite distinct from the former, that is the *mechanical*, which relates principally to the weight and tenacity of the soil, while the chemical powers supply the necessary ingredients for the growth and maturity of the cultivated crops. It is, therefore, in their combined action that the most desirable results become manifest. It is, however, worthy of inquiry, whether or not the use of fresh dung for stiff land, and rotten dung for porous land, is supported and confirmed by the chemical character of dung? When fresh dung is used upon stiff land, we find that the decay which then takes place acts upon the land, and renders the dormant ingredients of the soil active, and thereby converts matter which could not nourish a plant into valuable food for vegetation. It also imparts to the soil a beneficial warmth, which is favorable to germination and vegetable growth. In addition to this, the absorbent powers of the soil seize and return the products of this fermentation of the dung, and secure them until required by the growing plant. In the case of a sandy land, the circumstances, as well as the powers of the soil, are totally different. The porous character of the soil is decidedly unfavorable to its power of retaining manure; and consequently we cannot look upon such soils as safe guardians

of manure, and for this reason it should be added, so as to be immediately available for the crop. The manure, consequently, is more suitable when well rotten, upon chemical grounds, as well as upon a consideration of its mechanical character. The same principle is applicable to all the intermediate descriptions of soil, modified by the same rule.

The time for applying farmyard manure must greatly depend upon the nature of the soil and the crop to be raised. In soils of a retentive character, such as clays, marls, and strong loams, farmyard dung, even in a rough state, that is but imperfectly decomposed, may be ploughed in almost at any time, with advantage. In very porous soils, resting on loose, gravelly strata, it is impolitic to apply manure till a short period previous to the sowing of the seed, or it can be absorbed by the growing plant, otherwise much of it will percolate away in a fluid state, and consequently will, in a great measure, be lost.

From time immemorial dung has been employed as a top dressing for pastures and meadows, and has generally met the approval of practical men. But there have not been wanting those who have stoutly opposed this practice, representing it as wasteful, and generally unaccompanied with any benefits, proportionate to the cost. The objections are not wholly without foundation. The careless manner in which the operation of top dressing is sometimes conducted, leads, no doubt, to much unnecessary waste. In this climate, dung exposed in the fields during the inclement weather in winter, seldom loses much of its fertilising ingredients, as little or no fermentation is set up. But the danger is when spring commences; the increased temperature and moisture hasten decomposition, and unless the manure be carefully worked in by the bush-harrow or other means, there is much risk of an escape of ammonia and of some portion of the liquid manure running to waste. If the dung be well decomposed before it is applied, and worked in as quickly as possible after being spread, the loss will in general be comparatively trifling. Dr. Voelcker, to whom we have already referred in this article, has recently thrown considerable light on this subject. He has ascertained by carefully conducted experiments that, in *well fermented dung*, the ammonia exists in combination with the organic acids, forming compounds which are not volatile. The original ground on which top-dressing was condemned was that, in consequence of the *volatile* character of the ammonia, we lost considerably by the practice. A more complete knowledge of the character and composition of dung thus confirms the experience of the past, and points to the *well-rotted* manure as being of great value for top-dressing; involving comparatively little waste, when the process is conducted with ordinary skill and care.

On the Botany of the Red River Settlement and the Old Red River Trail.

[The following interesting paper, by John C. Schultz, Esq., was read at the meeting of the *Botanical Society of Canada*, at Kingston, Jan. 11th, 1861. We are glad to see this young and important Society already exhibiting unmistakeable symptoms of healthful activity, and heartily wish it a long career of usefulness.]

EDS.

The Red River Settlement of late years attracted much attention in Canada on account of its isolated position and the many and vague reports that were in circulation regarding it, some describing it as a land of milk and honey, and others as a cold barren waste. But little was known of the real resources of the country till the years 1857 and 1858, when the attention of our Government was directed to it, and they ordered two Expeditions to be fitted out, one under the charge of Mr. Hind, and the other under Mr. Dawson. These gentlemen, on their return, after an absence of eighteen months, submitted their Reports, accompanied by maps and a geological description of the country traversed. These were published and widely distributed, and many of you no doubt have seen them. Therefore any account that I give of the settlement will be as short as possible.

It is situated on the Red River, near its entrance into Lake Winnepeg, occupying both banks of the Red River and the Assiniboine, which empties into the Red River at the Hudson's Bay Company's post Fort Garry, the centre of the settlement. The settlement extends from the mouth of Red River up about forty miles, and on the Assiniboine River about twenty miles. The distance of the settlement from St. Paul is said to be six hundred miles, and from Lake Superior about three hundred. The population is estimated (rather high I think) at 10,000, including the roving population, who live alto-

gether by hunting. The climate resembles that of Montreal in the length and continued cold of the winters, and the rapid vegetation in the spring after the snow is off the ground. All the cereals are raised in abundance, the average produce to the acre exceeding that of Canada. Garden vegetables are also grown in abundance. Indian corn, however, is not so successful, being nipped by the early frosts.

While residing last summer at Fort Garry (the Hudson's Bay Company's post in the settlement) I had an opportunity of collecting specimens of plants, some of which are now exhibited to the Society. From want of the necessary material they were rather imperfectly prepared, but may perhaps serve to give a general idea of the botany of the immediate vicinity of the Fort. On referring to the list it will be observed that here, as in other prairie land, the richest family is the Compositæ, many species of which are found. At the Fort we have not only the ordinary Prairie Composites, but a great abundance of such plants as Artemesia Absintheum, especially on the dryer and higher parts. Next in frequency come the Cruciferæ, which generally follow man; these are abundant in the immediate vicinity of the Fort. There are many species of Rosaceæ and Leguminosæ, truly indigenous; Umbelliferæ are not unfrequent, and we have frequent representatives of Ranunculaceæ, Xanthoxylacæ, Violaceæ, Balsaminaceæ, Caprifaliaceæ, Rubiaceæ, &c. The timber trees near the Fort are small groves of aspen and balsam poplar, and on the banks of the rivers oak, ash, elm, maple, aspen, and balsam poplar.

As I had an opportunity of collecting some specimens in the vicinity of the trail coming from Fort Garry to St. Pauls, I propose to give a description as short as possible of the character of the country coming down, so that it may be an assistance to those wishing to examine the specimens.

From the Red River Settlement to Canada there are three routes more or less in use. The oldest and the one now least used is known as the Old Red River Trail. This, leaving the settlement, passes up on the west side of the River Pembina (a small settlement of half breeds immediately on the international boundary line,) and distant sixty-five miles from Fort Garry. Crossing the Red River the trail takes a nearly southwest course, crossing all the eastern tributaries of the Red River, the larger of which are the Pine, Red Lake, Wild Rice, and Otter Tail Rivers, and ends at Otter Tail City, the first settlement on the American side. From here there is a bridged road to Crow Wing, seventy-five miles, and from thence to the city of St.Paul, a stage road af one hundred and fifty miles. Thence the traveller passes by steamboat and railroad to Canada.

The second route is our Canadian route, which, I am sorry to say, is not so practicable as might be wished. This is a canoe route, passable about five or six months in the year, and always attended with a good deal of difficulty. This route is made by descending the Red River to Lake Winnipeg, ascending the Winnipeg River to Lake of the Woods, and from thence passing through the chain of rivers and lakes and over the numerous portages or carrying places to Fort William on Lake Superior. From Fort William there is communication with Canada by the mail steamer *Ploughboy*, which leaves monthly during the navigation for Collingwood.

The third, known as the new route, is the one now most travelled, and the one through which the Hudson Bay Company bring their furs. It was opened up last year for travel by parties in St. Paul, who took a small steamer over to the head waters of the Red River in pieces on sleighs the winter before last, and put her together there, then cutting a road through from St. Paul to the head of navigation on Red River, they connected the boat with St. Paul by stages. By this route you leave the settlement in the little steamer referred to, ascend the river about three hundred miles to Georgetown, the head of Navigation, and take the stages there for St. Paul. By this route it is possibe to travel from the Red River settlement to Canada in twelve days, which is a great improvement on the ordinary time of twenty-five to thirty days by the other routes.

Now it was getting rather late in the season for tbe Lake Superior Route, and the water of the Red River being too low to admit of the little steamer making the trips, I was compelled either to come down by the old trail or postpone my journey till next spring. However, as my companion, Mr. Buckingham, was determined to come, we began preparing for the trip, first with two hardy Indian ponies, which are the only horses fit to travel of this kind, a common Red River cart to carry our clothes, blankets, and provisions, a few cooking arrangements, four blankets, two buffalo robes, a gun cart, cover, and provisions, which last consisted of twenty pounds of pemmican, thirty pounds biscuit, butter, sugar, and tea. These were packed in small parcels, for convenience in crossing rivers, as in some places the rivers were too deep to ford, and we had to raft the baggage in a kind of a rude boat, made by stretching the canvass cart-cover around the body of the cart, and drawing this over with lines.

(*To be concluded in our next.*)

Hiring of Farm Servants in England.

A correspondent has sent us a report of a meeting of the Penrith Farmers' Club, from which we make the following extract from a paper read by the Rev. J. Simpson, on the relation of master and servant in the farm houses of

Cumberland and Westmoreland. The modes of hiring servants, and other agricultural customs differ very widely in different parts of the United Kingdom. The Bothy system, which has existed so long in some parts of Scotland, and been productive of much social evil, has at length received its death-blow. Formerly it was the general practice for farmers to keep their unmarried servants in their houses, to admit them to their own table, and exercise over them a sort of paternal government. During the last thirty years matters have greatly changed in these respects, and few farmers keep more than one man in the house; single men get lodgings in the cottages of married labourers. It is principally in reference to this change Mr. Simpson observes:

But with this great change in the relative position of master and servant it is a question whether other changes are not desirable. It is not for me to say what might be done under the present system of hiring servants into the house, yea, even what is now perhaps done in some few instances. None can doubt the great benefits that servants might derive from a residence under their master's roof. The farmer who employs many workmen, the great majority of whom form part of the family, might have a wonderful influence for good over those who serve him—might, like the patriarch of old, command his children and his household after him, that they should keep the way of the Lord, to do justice and judgment. There may be instances of this fatherly care and protection—there may be masters and mistresses who know the responsibility imposed on them by their position, and strive in some measure to influence their servants for good; but, as I said before, it is not for me to speak of what might be, but of what is, and I am much mistaken if in the great majority of farm houses servants are not left to their own desires; and as they sit around the fire on a winter evening it is very doubtful whether their conduct is becoming, their conversation edifying, or the treatment to which the younger girls especially are exposed, is such as their mothers would approve. That there are many exceptions I am perfectly well aware; that there are very many amongst farm servants themselves to whom loose and profane talk is disagreeable, I well know; and a change in the present system of hiring, in many respects, would be more beneficial to servants than to masters. At present the master goes to the market and hires a servant of whose moral conduct and character he knows little or nothing. That servant in due time takes up his residence in the master's household, and has his place at the kitchen fire. Few days elapse until his conduct and conversation rank him as very different from those amongst whom he has found a place. For God's name he has no reverence, in female virtue no faith, and his fellow-servants begin by tolerating and too often end by approving of what he does and says. Or you may reverse the picture, and follow a modest and well-conducted girl from the Sunday School to the hiring, and from the hiring to her first place. Stand by her in thought as she first listens to language to which her ears have been unaccustomed, follow her if you will to the ill-arranged sleeping apartments, and realize the shock to her feelings when she finds she cannot even undress without being overlooked, and then remember that she must endure this, and much more than this, or go to prison, and that because she has been hired out for half a year as a servant in husbandry and must serve her term. And here I may remark upon the inequality of the law as it affects masters and servants. If a servant in husbandry hires for half a year, he must serve the term, or may be imprisoned. However much he may dislike his service, however hardly he may be treated, to whatever evil influences he may be exposed, from whatever temptations he may desire to escape, he cannot terminate the service without running the risk of imprisonment. While on the other hand the master may turn away his servant at a moment's notice, and if he pay him wages for the time he has served, it seldom happens that the servant can obtain any recompense. It is very true that if he waits until the end of the half-year he may try to obtain the half-year's wages; but he will most probably be brought face to face with one of those gentlemen whose business it is to make the worse appear the better reason, and whose profit depends upon their success in doing so, and in nine cases out of ten the servant will have to be satisfied with wages for the time he has served. Such being the state of the law it is to me surprising that servants should still continue to hire for the half-year, surprising that they should not engage themselves on the condition of a month's notice or a month's wages. That such will eventually be the case I have little doubt, and I believe that such a change would have a most beneficial effect upon the social condition of servants, and help to lessen an evil which all regret, the frequent change of place. Under the present system of half-yearly hirings change of place is almost a necessary consequence. As the term approaches masters and servants have to make fresh arrangements. The master may have no fault to the servant, and the servant may like his place, but he thinks he ought to have more wages. The master is unwilling to advance. The bargaining goes on until the hiring day and they part, the servant probably to get less wages at a worse place, and the master to hire a stranger for the same money. And so long as there are half-yearly hirings there will be these constant

changes of place and all the evils which necessarily arise out of these changes. Inconvenience might indeed arise if men-servants could leave their places at a month's notice: but in the case of women servants there could be no such inconvenience, and the change would be for them and for their employers an unmixed good. However, this change in the conditions of hiring is only one of several things needed to improve the social comfort and elevate the moral condition of your servants. If employers of farm labor are really anxious to check that evil which is said to prevail to so great an extent amongst the farm servants of Cumberland and Westmorland, they must provide them with amusements less corrupting than fairs and "merrie nights," allow them more seasonable opportunities for honourable courtship than the midnight hour, and give them greater facilities for marrying and making homes and firesides of their own. Now that the intimate intercourse between masters and servants, which once was, has ceased to be; now that young men and women hired to live in farm houses no longer spend their leisure time in the company or presence of the master and mistress of the household; now that there is no restraint upon the rude conduct, no check upon loose and profane talk, nothing to interest or instruct, nothing to elevate or refine the servants in our farm houses, it is doubtful whether the present system of hiring into the house is good for either master or servants.

Observations on the Physical Geology of the Western Districts of Canada.

BY CHARLES ROBB, C. E., HAMILTON, C. W.

From The Journal of the Canadian Institute.

(Continued from page 45.)

Strata traced Westwards.—The various members of the series of rocks already described, are also exposed in tracing the escarpment running parallel to the shores of the lake, from Niagara to Flamboro'. The strata lie nearly horizontally from east to west, but dipping slightly to the eastward, the dip of the lower sandstone bed (called by the quarrymen the Gray Band,) which rests immediately on the red marl, being at the rate of twenty-two inches per mile. An extensive observation of the section thus exposed will shew the remarkable manner in which certain of the beds thin out and die away as you follow them westwards; while others not to be discovered at the Niagara River are intercalated in the series, and as they are traced in a northwest direction attain to a great thickness, still retaining their distinctive characters. Thus the great deposit of dark shale, which at the Falls shows a thickness of eighty or ninety feet, is represented at Flamboro' by a bed of only five feet thick; while the encrinal and cherty limestone, which at Flamboro' occupy a most prominent place in the group, die out gradually and are scarcely to be detected at the Falls.* This same encrinal limestone, which at Flamboro is only about twenty feet thick, is observed to attain a thickness of one hundred feet in Eramosa, Nassagawea and Caledon. This limestone, as well as the underlying Clinton limestone, is everywhere well adapted to form an excellent and durable building material, and is likewise of good quality for burning into lime. It forms wherever it crops out a bold escarpment (which may be called the Niagara ridge) owing to its solid and apparently unstratified character. This escarpment is distinctly traced from West Flamboro' eastward into Nelson, where it takes a sweeping turn to the north, and maintains a nearly straight course in that direction until it reaches Owen Sound, near Sydenham village. The dark bituminous limestone which forms the upper member of the group follows the same course, which, however, is not so distinctly marked, owing to its being stratified in thinner beds, and occupies throughout from the Niagara River to Owen Sound, a breadth of country varying from eighteen to twenty or twenty-two miles.

The red marl which forms the base of our series of rocks is supposed to be about 614 feet thick. The bore which yields the mineral water at St. Catherines pierces it for a depth of nearly four hundred and seventy feet without passing through it, and the level at which the bore commences is one hundred feet below its upper surface. It seems geographically to come to an abrupt termination at the west bank of the creek at Oakville, and is there succeeded by the Lorraine Shales, or Hudson River Group—an older formation consisting of alternate very thin beds of limestone and shale, which extend from this point along the north side of Lake Ontario to the River Rouge in the township of Pickering, immediately adjoining Scarboro'. A good section of this formation is exposed on the east bank of the Don at Toronto. A bore which was executed under my directions at the Toronto Station of the Great Western Railway, penetra-

* This phenomenon, which is not peculiar to the Silurian or any other system, though nowhere perhaps more strikingly apparent than in this locality, may, I conceive, be accounted for in three ways: Either, 1st. That in the wide and deep ocean in which these deposits were made, certain of them never reached the deeper portions, but subsided along its shores; Or, 2nd. It may have been caused by certain portions being too shallow or even upraised above the surface of the water. Or, 3rdly. After the deposition of the stratum, it may have been uplifted so near to the surface of the sea, as to have been worn away by the waves, and thus have allowed a succeeding deposit to come directly upon one of preceding date.

ted it for a depth of one hundred and fifty feet without change. The water which this bore yielded was salt and bitter, and a considerable quantity of carburetted hydrogen gas was evolved.

I may here remark in passing that in the spring of 1855 a great land-slide occurred on the slope of the mountain a little below Dundas Station, which displaced a portion of the track of the Great Western Railway, and was caused by the weight of the debris of the harder rocks above sliding along the face of the soft shales which, by exposure to the weather, resolve themselves into an unctuous sort of clay.

I may also notice that in filling up the old channel of the Desjardins canal, enormous quantities of material were thrown in and disappeared, producing no effect in forming a bank, but forcing up the soft material in the original bottom of the marsh to a considerable extent and height above the surface. This affords a good illustration on a small scale, of what the geologist often finds on a large scale, and may be puzzled to account for; I refer to the displacement of strata, formed in horizontal position and thrown up into a highly inclined or even vertical position.

Waterlime and Ochre.—Before noticing the superficial deposits of this region, I shall direct atention to the waterlime and ochre beds of Thorold, which are somewhat extensively worked for commercial purposes, and occur about three hundred feet above the level of the Lake, and close on the line of the Welland Canal at Thorold. The waterlime deposit consists of a series of thin layers (each layer not exceeding eight to ten inches thick) in all about three and a half to four feet thick, of very hard compact dark blue limestone, corresponding in position and probably identical with the Clinton group. These beds are in some places a perfect congeries of large bivalves, called *Pentamerus oblongus*, some of them measuring three and a half to four inches across, while the partings of the beds are beautifully marked with fucoids of various species. The limestone from this bed, when calcined and ground to powder, forms an hydraulic cement of the best quality; owing this peculiar property to the presence of a large proportion (over ten per cent.) of silica or silicates. Immediately underlying and overlying this bed, are thin layers of a softer stone, which, when calcined and ground, forms an excellent drab coloured pigment; a rich brown paint, said to be fireproof, is also manufactured at Thorold, from material found in the same quarries.—Whether these peculiar products extend far to the east or west of the localities where they are at present quarried, I am unable to say; but at Rochester there occurs an iron ore bed at the same place in the series, and Dr. Mack of St. Catherines has ascertained that the stone from the drab ochre bed contains forty per cent. of iron.

Superficial Deposits.—I shall now, as briefly as the subject will admit, direct your attention to the superficial deposits of this region, and the proofs of glacial action which they afford. It is now pretty generally conceded, and in fact cannot on any reasonable ground be denied, that the thick deposit of clay, sand, gravel and boulders which covers the Western districts of Canada, (in many places upwards of one hundred feet beneath the general surface, and along the shores of Lake Erie and elsewhere forming hills one hundred and fifty feet above the general level,) is due to what is called by geologists the glacial period, and the phenomena referable to this epoch, are precisely similar on both sides of the Atlantic. From well known cosmical laws, icebergs and fields of floating ice are constantly, in seas north of the fortieth parallel of latitude, passing from the Polar regions in a direction from N.E. to S.W. and are conveyed for hundreds of miles from their original birth-places; and these are frequently found to be charged with vast quantities of mud, sand and boulders, the debris of the granitic rocks which mostly occupy these regions. These ice-islands become stranded in seas too shallow to float them, and as the ice is melted, deposit their insoluble contents at random over the bottom of such seas, and the deposits thus formed would be stratified or unstratified according as the water was in a quiescent state or disturbed by currents. The slow passage of these ponderous masses, armed with such refractory materials, over the rocks forming the bottom of the seas, would grind down their upper surfaces, removing great quantities of their constituent materials, and producing grooves, furrows and scratches in the normal direction of their course. We have, on a small scale, an example near our own doors of the effect of ice in removing masses of rock. I refer to the fact that the isolated rock called Gull Island, between Cobourg and Port Hope, two miles from the northern shore of the lake, and on which the lighthouse is built, formed at the time of the early settlement of the country, an island of over two acres in extent, but is now only a sunken reef, owing doubtless to its having been as it were decapitated by the ice forming over and adhering firmly to its upper beds, which would be borne away with the floating ice during storms. The same process is continually going on upon a larger scale in Lake Superior, and the observations of navigators in the Arctic regions supply, on a still more extensive scale, all the "modern instances" requisite for the corroboration of the theory.

Now it is an interesting and important fact that the constituent materials of the clay, sand and gravel which cover the greater part of Canada West, are derived from granitic and trappean rocks; that the boulders embedded in the clay and strewed over the surface are, for the most part, fragments of the same rocks; that

these rocks are found in their native beds invariably in a North-easterly direction, and that the surfaces of the harder rocks *in situ* in the peninsula, wherever exposed by the removal of the drift, are found to be smoothed, polished, furrowed and scratched in a direction from N.E. to S.W. Any one who has had occasion to visit Niagara Falls will see this phenomena strikingly developed along the top of the cliff on the American side, and at the excavation for the Hydraulic canal, about half a mile below the Fall. That this smoothing and scratching of the rocks could not be produced simply by the action of torrents of water carrying stones with it, may be satisfactorily proved by examining the rocks in the bed of the river, which, even where the current is most rapid, exhibit no analogous effect.

Importation of Seeds.

Mr. Editor,—I have just read an article in the *Agriculturist* of last year, on the subject of imported seed, and thought I would communicate something to the same point. About ten years ago one of my present neighbours sent home to Sussex a few oats, which were carefully sown in a garden and multiplied from year to year, until enough were produced for public sale and distribution. These Canadians, as they are called there, are now widely spread, and well known as coming to harvest two or three weeks earlier than the common English oat, are heavier, and produce a larger crop.

When in England in 1858, I saw them standing alongside of others, and they were a fortnight ahead of the common sort, and an incomparably better sample. Last year, notwithstanding the unfavorable weather, they sustained their character, and my brother-in-law, writing to me says: "I have bought Canadian Oats weighing 46 lbs. per bushel, (they have sometimes weighed 48 lbs.) although many English Oats are not worth finding. Mr. Agate sowed all Canadians this year, perhaps 100 acres, and I think they are better than ever."

Now Sir, I think all this goes to prove that it is profitable for English farmers to get their seed here, but that owing to the shortness of our season compared with theirs, English seed will not suit this country. I know that English oats and barley have failed up here. Yours respectfully, Peter Fuller.

Meaford, January 38, 1861.

Swiss Cultivation.

The following is a notice of the farming on the Rhine:—The cultivators of the soil must, in many cases, live more than two miles from the scene of their daily labours. The general aspect of the plain is no doubt monotonous, but is a monotony of beauty, and a beauty which fills the mind with images of peace and plenty. In this vast plain there are scarcely any fences, but there are innumerable rows of trees, which probably mark the boundaries of property, with many little plantations of copsewood, and some considerable masses of forest. A large proportion of the whole surface is in grass, which is cut for forage, and is in extensive tracts, suggesting the idea of large properties, or large holdings. The face of the land under tillage conveys a very different impression, and would have amazed us, if we had not seen the same thing in France on a smaller scale. Here we find six distinct crops on four or five acres. By the side of an acre of wheat, for instance, on one broad furrow, you find an acre of potatoes; then follow half an acre of tobacco plants six feet high, half an acre of hemp, an acre of barley or rye, half an acre of hops, or poppies, or clover, and all generally clean and fair crops. A field of five acres in one species of produce is quite a rarity, and this over a range of 200 miles! These little plots of many colours, standing side by side, give the cultivated land the aspect of a nursery. Do they indicate minutely divided property as in Belgium, or minutely divided tenantcy, as in Ireland? These are questions not to be answered without consulting books to which I have no access. I saw no Indian corn, or, at least, nothing which I could recognize as such, for I ought to tell that I have never seen the plant growing, except two or three stalks in a garden. Perhaps it has been superseded by potatoes, of which the quantity raised is very great. I am equally at a loss to account for the vast breadth of land in grass, the whole produce of which would seem to be used as hay, for we did not see a single horse, cow, or sheep, pasturing in the fields. Perhaps the intense heat at this season renders it necessary to feed the animals under cover. Here, in Switzerland, the cows pasture on the mountain tops all day long, at 6,000 or 7,000 feet above the sea; but in the low land, where we are living (Interlaken) they are let out only in the morning and evening, and housed during the heat of the day.

Do Sheep Require Water in Dry Weather?

Many farmers provide no water for sheep in winter while they have access to snow; but this is poor management, as sheep require much water while eating dry food; and to eat snow to slake their thirst is a tedious, unpleasant, unsatisfactory way, in which the animal will not take so much moisture as is necessary for health and good condition. In summer, sheep will do very well without water, as has been proved by experiments; and we have learned this by years of observation, having frequently been most of the day in sight of the only watering place in the pasture, and never seeing the sheep drink, nor

their tracks around the water. But in the warm season they have moist food, and they usually feed when the dew is on.

If sheep be provided with a good watering place in winter, they will frequent it often, probably oftener than any other animal; and we have no doubt that they will go as far for water as other animals, after they have been introduced to it in a kind and gentle manner.

We have observed that sheep will go and drink in the morning, even to a considerable distance, before they have half done their breakfast; and they generally go to the water several times in the day, while some other animals only go once or twice. This shows conclusively the importance of a good supply of water.

Bees—How to Feed Weak Swarms.

Eds. Rural New-Yorker:—I have some late swarms of bees which I wish to winter, and I think they have not enough honey and but litttle bee-bread. Will you please to inform me through the columns of the Rural, how I can most successfully feed them?—J. B. L., *Cuba, N. Y.*

Feeding bees should generally be over by the last days of October. If obliged to feed bees after the middle of November, it will generally be the better way to take them up; for, if by this time, they have but a scanty suppy, it will cost nearly as much to feed them as they are worth, to say nothing of the trouble incurred. However, we will do what we can under the circumstances, as our correspondent seems desirous to winter his bees if possible. Now, if Mr. L. had only taken the precaution to have stated the *kind of hives* his swarms are in, it would have saved some unnecessary remarks. As different directions must be given with different kinds of hives, i. e., hives with moveable frames and hives without frames, —this seems to be necessary.

If the swarms are the common surplus box hives, we would say, move them at once to a good dry, dark cellar, where the temperature may be uniform; and then commence feeding by placing empty combs under the hives and also in the surplus honey chamber, which are to be kept supplied with honey, or what is *cheaper* and *equally good*, a preparation made as follows:—One-third part honey, and two-thirds coffee sugar —the sugar first dssolved by warm water. After the sugar is dissolved, then add the honey—the mixture should be well stirred and nearly the cousistency of honey. If the hive be not provi, ded with a chamber, it may be inverted, and the empty comb be filled with honey, or the preparation laid directly on the combs upon which the bees are clustered. The bees will not leave the hive if the cellar be perfectly dark. It would be folly to attempt to feed bees unless they can be kept at such a temperature as to induce them to go in search after honey for them. If this cannot be done in the cellar, they may be moved to a warm, dark room in the house, where they should remain till they have stored enough in the hive proper to last them a month or more,—this will depend upon the amount of comb there is in the body of the hive—when they may be returned to the cellar. The less bees are disturbed and the more uniform the temperature, the less honey they will consume, and the better they will winter.

If the hives have *frames*, we should say the better way would be to unite the contents of any two swarms. There will be but little contention among the bees, provided they be thoroughly sprinkled with diluted honey scented with a few drops of peppermint essence. As bees distinguish each other by the *scent*, they will thereby not be able to dlstinguish "friend from foe." Again, if some colonies are strong, and have more than 25 pounds of honey,—the amount necessary to winter a good swarm,—the excess may be taken away by means of the frames, and given to the destitute swarms. This method of feeding bees by removing the frames of comb—is the best and safest known. By it bees from other hives are not attracted to the hives thus fed, as no scent is emitted by the honey as when fed in the otdinary way; no labor is required from the bees, and but little time and labour are required from the keeper. Should the swarms be united and then need feeding, they must be moved either to the cellar or room, and fed by placing comb with honey in the chamber. By proper care and attention to these directions, there will be but little danger in wintering bees having a scanty supply of stores.—*Rural New-Yorker.*

The Best Mode of Mixing Salt and Lime. Soda made according to the plan of J. Benet, Esq.. M. P., for Wiltshire, I have found a good application to land at the proper time. Lay three inches of unslaked lime, ten feet long and six wide, as a bed, then spread one inch thick of common salt. Repeat these layers till a bed two feet high is formed. If the mixture is made in summer, when it is dry, it may be in the open air; at other times, under cover. After ten days turn it over, and repeat the turnings five or six times at intervals of seven days; spread from a cart about sixty bushels per acre, covering the horse with a sheet or cloth to prevent burning the hair off. It should be ploughed in before wheat sowing.—*Hillyard's Practical Farming.*

Breeding from Young Sows.—The *Maine Farmer* says, "It is quite common to breed from young sows, say fall pigs when one year old, a practice to be utterly condemned, and if continued in the same family for a few generations of the swine, they will be found to dwindle down from three or four hundred hogs to two or

three hundred. It is much better to keep the sow three or four years, or even much longer—they have been kept some fifteen years to advantage. The hog is some years in his natural state in maturing. It is a fact well known, at least to every Irishman in the "ould" country, that pigs from old sows will grow into hogs some thirty or forty pounds heavier than those from young ones."

Lime as a Manure.—Mr. Towers, in *The Farmer's Magazine*, thus sums up the qualities of quicklime:—"1. If applied to green vegetables, quite hot from the kiln, it will destroy the tissue and carbonize the substance, itself being brought into the state of mild lime or chalk. 2. As powdered or air-slaked lime it will directly kill slugs and moluscous vermin, acting by its peculiar attraction for water. 3. As an alkali it will neutralize acids of every description, and hence is peculiarly useful if dusted over trees infested with lichens. 4. Its affinity for humic acid is predominant, as we have seen; and, therefore, it becomes a specific remedy wherever there is a redundance of inert decayed vegetable remains. 5. According to high chemical authority, it is capable of liberating potassa from clay and granite rocks, and of setting it at liberty from its combination of flint as an insoluble silicate of potassa. 6. It is a mistake to suppose that quicklime renders vegetable and animal remains soluble. These substances are partially soluble, as we have seen in the three alkalis; but the precipitate formed by the addition of lime is not soluble, or, at any rate, it is so far fixed that it will remain long quiescent in the ground, from which it can only be taken in very small quantities, and slow degrees, according to the capacity of the vegetable for such food. Lime, then acts as an antidote of redundant humous matter, attracting and fixing its acid as an innocuous humate.

Agricultural Intelligence.

Stock Importations.—We learn that Mr. Stone, of Guelph, in addition to his importation of Herefords, lately noticed, has also made an addition to his flock of Cotswolds, of thirty-six ewes and rams, per *Anglo Saxon*, which he hopes will enable him to supply the increasing demand for this breed of sheep next fall. The Herefords are doing well since they have gone into winter quarters. Mr. Joseph Kirby, of Guelph, has added to his flock of Leicesters, six fine shearling ewes, per same steamer. Mr. Stone's flocks and herds are attracting attention in widely-spread portions of the continent. During the last two months he has sold sheep to go to California, Virginia, Pennsylvania, New Hampshire and New Brunswick, as well as to a large number of counties in Upper Canada.

Sheep Killing.—We are informed that Mr. W. Bamberger, two miles north of Waterloo had eight sheep bitten by a dog last week, out of which six have since died. Mr. Moses Shantz, a neighbor of Bamberger, had also nine sheep bitten by the same dog, it is supposed, and eight out of these have died. Mr. Bamberger's sheep were valuable ones, as were also Mr. Shantz's, and their losses are quite heavy.—*Waterloo Chronicle.*

Royal Dublin Show.

The usual winter show of this old society took place in the City of Dublin the second week of December, but it would appear that the agricultural department of the Winter Exhibition, for want of adequate encouragement, has of late years been declining. The Reporter of the *Mark Lane Express* observes:

"For the long period of 130 years the Dublin Society has been a prominent, and in many respects a useful institution in the sister island. Aided by considerable annual parliamentary grants, it has laboured in "promoting husbandry, and the other useful arts"—being the objects for which it was first established, and in the furtherance of which it has drawn into the ranks of its members a large number of the landed proprietors in Ireland, although not so many as it ought, perhaps, to have. Still they form the bulk of its members, who believe that they are fulfilling at least part of their duty when they have become contributors to its funds.

For many years "the promotion of husbandry" in Ireland formed by far the most important item in the annual accounts of the Society, and large sums were expended in encouraging planting, draining, the introduction of new varieties of plants suitable for the farm and the garden, the improvement of live stock, and in different channels which are now apparently forgotten—not the least important being the maintenance of a veterinary institution, which is now, by the way, sought to be revived, as it ceased about forty years ago, from some causes which are now apparently rather difficult to trace. Although perhaps, this might have originated in a certain indifference to agricultural matters, which has of late increased to a considerable extent in the management of the society, and which even at that period might have begun to exercise its baneful influence. Be that as it may, certainly the Dublin Society of the present day is not the Dublin Society of sixty years ago. Its liberal premium system has dwindled down to a very small sum, and its Agricultural Committee, instead of occupying, as it ought to do, the foremost place, is shoved into a corner, and its most moderate demands met by a growing non-compliance.

The truth is, Irish country gentlemen gener-

ally do not take an active part in the general management of the Society; whilst those who do are unable to fight against the stronger influence of others, not at all connected with the management, and who do not consider farming matters "genteel" enough to merit the attention of such *savans* as they fancy themselves to be. *They* consider, forsooth! that the Dublin Society, founded for the purpose of promoting husbandry, ought to devote its fostering care to "higher branches" than the rearing of bullocks or the management of muck-heaps. Consequently, they intrude into matters with which they have here no concern, but which form the special province of other societies; and to effect this, they first starve, and will ultimately ruin, that department of the Society's operations which is its first concern, unless public opinion steps in to save it.

The spring shows of the society have for several years been no doubt, highly successful; but we deny that such success is attributable to encouragement afforded by the Society. It gives, indeed, a convenient place of meeting, and that is nearly all; for the premiums are laughably low, and would not, of themselves, draw together a parcel of common pig-jobbers. But then, breeders find the spring shows admirably suited for enabling them to dispose of their young stock; and hence at those meetings, there is a turn-out of yearling Shorthorn bulls such as we do not meet with elsewhere. Implement-makers also find the "Leinster Lawn" a first-rate sale-ground; but all the Society does is to find the ground, for which they charge largely."

The winter shows formerly consisted of roots, cereals, and butter, but latterly fat stock have been added. But it is stated that the same reasons which lead to a full show of breeding stock in spring, do not apply to a winter exhibition of fat stock, and that the society do but little to encourage it, especially when their ample means are considered. Owing to the curtailment of the premium list, and the unfavourableness of the season, the quantity of fat cattle, sheep and swine, was smaller even than usual, but the quality was good, considering the state of the weather during the whole of last year.

The soil and climate of Ireland are peculiarly adapted to the growth of root crops, and we have frequently seen astounding accounts of the size and weight of turnips, mangels, cabbage, &c., at their winter shows of the Dublin Society. The weather of the past year was of course unpropitious for these productions, yet we find the following facts in the report of the late Exhibition. Many samples of grain were of course a little raw and soft, but the 1st prize white wheat weighed 61lbs. a bushel, and the red 61½lbs. Barley 57lbs. Oats 44½lbs. The best six Swedes weighed 94lbs.; another lot which arrived too late reached 119lbs! Six roots of Aberdeen turnips, 86lbs. Four white cabbages, 150lbs. Six roots of long red mangels weighed 69lb.; long yellow mangel, 70lbs.; red globe mangel, 55lbs.; and yellow globe mangel 68lbs. First prize for twelve roots of Attringham carrots weighed 33lbs.; Belgian carrots, 32lb.; parsnips, 33lbs. The show of hemp and flax was small, but several samples were of very superior quality.

The Northern Counties Fat-stock and Poultry Show.

The Northern Counties Fat Stock and Poultry Society, hitherto known as the "South Durham and North Yorkshire," held its eighth annual exhibition in Darlington, on Wednesday, Thursday, Friday, in the past week. It proved to be, what it was fully expected to be, by far the best show ever held, not only by the society, but in the north of England, for not merely were the entries more numerous (although a material decrease was exhibited in the number of cattle), but they were greatly superior in quality. The following is a comparative statement of the number of entries for the latter years of the society:

	1855	1856	1857	1858	1859	1860
Cattle ...	75	73	78	66	81	51
Sheep ...	27	16	14	12	21	20
Pigs	14	21	22	33	32	44
Poultry ..	403	477	377	480	339	471

Thus showing, as compared with last year, a falling off of 30 in cattle, and one in sheep, and an increase of 12 in pigs, and 132 in poultry.

The chief attraction of this show, and why we more particularly notice it, is the superior class of shorthorns which it is the means of bringing together. This very excellent and deservedly popular breed, in its early history, was known as the "Tees Water;" latterly the "Durham," or "Shorthorn." Of the dozen different breeds and sorts of beasts in this country, one third, we are told, are composed of Shorthorns. They are the most widely spread of any other, their popularity being confined not only to our own island, but extending also to the four quarters of the globe. Where, then, they are admitted to be indigenous to the soil, as is said to be the case with Darlington and the neighborhood, or the Vale of the Tees, it is most likely that we shall find the choicest specimens. And be it remembered that in this district there are many as great admirers of this species of animal as was ever Mr. Collins, to whose anxious devotion and care we owe so much. Last year the Duke of Cleveland exhibited an ox which had it been shown at the Smithfield Club or Birmingham would, it was generally asserted, and that by most competent judges, have taken the shine out of those which obtained the chief honors. This year, although

perhaps there was not one to equal in bulk that of the Duke of Cleveland's, there were many noble animals, and, as a whole, their quality was vastly superior to those shown last year. A heifer, the property of Mr. Booth, of Warlaby, near Northallerton, called the "Soldier's Bride," which was declared to be the best animal in the yard, and thereby won the "Founder's Cup;" a gold challenge vase, valued at 100 guineas, given by Mr. Mewburn, jun., a silver cup, given by the tradesmen and innkeepers of Darlington, and £15 as the best in her class, was only one year eleven months and three days old, and yet she weighed, it was estimated, dead weight, not less, perhaps more than 70 stones. Such an instance of early maturity, we believe, is not on record. Her symmetry was perfection itself, her back level as a board, and quarters exceedingly good; so with loins, ribs and shoulders; the beast could not be excelled, and her rump had the appearance of two fungi. Her flesh was particularly mellow to the touch, and her coat, white in colour, was almost as fine as silk. A thousand guineas is said to be about her figure. She was the observed of all observers; it was extremely difficult to get a glimpse of her, the stall being surrounded with spectators during the whole of the exhibition. She won a silver tankard at York the other day, on the occasion of a fat cattle show being held in that city. Providing she be kept for a couple of years more (and, as she is intended for breeding purposes, doubtless this will be the case) competent judges hesitate not to say that she will win all before her. We shall expect to find her at Birmingham or Smithfield next year.

The Shorthorns as a class are represented as excellent, and evenly fatted. In sheep nothing remarkable, although many well-known breeders entered the lists; but the pigs were more numerous than at any previous show, and it is doubtful whether as a whole they could be beaten anywhere.

"Altogether," remarks the reporter of the *Mark Lane Express*, from which the preceding account is taken, "the collection was such a one as any town might envy, and justly place the society in the rank they claim, namely, the *third* in the kingdom."

Yorkshire Fat Cattle Show.

The fourth annual Exhibition of this Society was held in the City of York in December last, and the numbers and quality of both stock and poultry were considered satisfactory. The money and plate given amounted to about £300. Mr. Repps' Shorthorn ox won the first prize. Mr. Booth's once renowned Queen of the Isles was beaten in her class by a heifer of Lord Faversham's. But her companion, Soldier's Bride, by Windsor from Campfollower, who is not quite two years old, and in training for the two year old heifer classes at the Royal next year, not only won the younger heifer prize, but the President's £20 silver tankard, as the best beast in the yard. The sheep were good: comprising excellent specimens of a cross between Lincolnshire ewes and Hampshire down rams, which is strongly recommended. A cross between a Cotswold and Leicester is also well spoken of. Pigs form a fine collection, comprising many animals of the large and small breeds that exhibited beautiful proportions, and evenly fattened.

Agriculture in the Cape Colony.

At the recent annual meeting of the Smithfield Club, Mr. Eaton, a Cape colonist, gave the following description of agricultural matters in that part of the world:

He then proceeded to give some account of the effect of an Agricultural Society at the Cape of Good Hope, and of his own fifteen years experience there as an agriculturist. It took five years to gain sufficient experience to make ends meet: the first two were spent with a large practical farmer, and during the others, which were on his own account, he lost £700; but that sum bought that experience which led to his subsequent prosperity. About fifteen years ago there were comparatively few English farm implements in the colony. The labour was unadapted for machinery or implements requiring careful usage; and an agricultural society was only kept alive by the indefatigable perseverance and assistance of some few, amongst whom was one of its most staunch friends throughout, Mr. T. B. Bayley (nephew to the late Mr. Butterworth Baley), who imported thorough-bred horses, sheep and other stock to a very large extent. The colony reaped rich harvests from these and similar importations. Wool is now exported largely; and, during the mutiny in India, the Cape supplied upwards of 6,000 horses, which had been very highly spoken of in India. About thirteen years ago Mr. Bayley imported a few of Howard's double-furrowed ploughs, one of which he (Mr. Eaton) used that season, as well as an American and the old clumsy Dutch plough, which required eight horses. He need not mention the result; but still the Dutch farmers were so prejudiced in favor of their fathers' and grandfathers' ploughs, that it took years for them to see their own interest; but the ploughing matches were too convincing, and now his (Mr. Eaton's) agents alone had imported upwards of a thousand of Howard's, besides many from Ransome. With regard to thrashing machines, which were almost unknown to most of the Dutch a few years ago, a trial of the few there had the effect of causing the farmers to come forward to order machines and join the society, and now they

were becoming quite general. These improvements had also convinced them of the value of improved labour; and now our Parliament has granted £150,000 for the importation of labour of that sort. Men with inclination to drink had better stay at home, as the Cape wine was cheap, wants few, wages good, and labour always in demand; but those who went, determined to resist this temptation, might work with the pleasant prospect of themselves becoming masters of comfortable homes in a few years. Mr. Eaton concluded by expressing his desire to learn more as to stall-feeding, which he thought ere long must be adopted in the colony.

Brahmin Cattle Crossed with Durham, Devon, and Native.

The following communication was addressed to the Secretary of the New York Agricultural Society by Dr. D. C. Ambler, of Jacksonville, Florida, and will be found to contain an interesting account of his experiments, conducted on a large scale, in crossing the Brahmin cattle on other breeds, in Florida. We copy it from the January number of the Society's Journal:

When I saw you last, I had made a commencement of a Stock Ranche, at Enterprise, on Lake Monroe, Upper St. Johns, some 200 miles South of this. My first enclosure consists of a prairie of some eight to ten thousand acres of very excellent pasture. I placed on it some four to five hundred native cows; on which I cross with bulls of half Brahmin and half Durham or Devon. The mark of blood in the grade calves is very distinct and very superior to native. These grade calves at six months are better calves than natives at twelve months—all from same class of cows, and running on same pastures, and all fat. Their rapid growth quite exceeds my expectations. These calves and their sires bear the heat and sun of our summers much better than their mothers, with an entire immunity from bilious diseases—as black tongue, murrain, &c. This season I place some four to five hundred more cows on the pasture, and a corres ponding increase of bulls; each year select cows from my outside or half wild-woods stock; adding others to those in the enclosure, till I rob my outside stock of all breeders. At the same time increase the size of the pastures and improve the feed by introducing improved grasses. Should my life be spared I hope, in a few years, to show a fine herd of blooded stock—when I should be most happy to see you, and ride over these beautiful southern prairies, in our sunny winter days.

The nine hundred calves I market this season, will make a beginning of rations for our good people, whether in the cotton fields or the tented field.

The fine stallion I procured from Jefferson County, in your State, bears himself well in his new home, and I trust a few years will show a good herd for the road, the saddle and the plow. My mares are running at large on the same prairie as the cattle—requiring no feed but the grass, for the whole year.—*January 1st*, 1861.

Shorthorns from America to England.

We remember hearing one of our enterprising Canadian breeders observe at our Provincial Exhibition four years ago, that the time was fast approaching when we might select as good specimens of several of the improved breeds of live stock, either from the United States or the British Provinces, as could be imported from Britain herself. This remark is beginning to be verified. We referred to this subject a few weeks ago, and have since found the following remarks in the *London Agricultural Gazette:*

It is interesting to learn that America, which has hitherto acted as such a drain on our best herds of Shorthorns in England, with no small profit, of course to their owners, is at length beginning to restore somewhat of the benefit she has thus derived. We understand that Mr. Langston, M. P., of Sarsden, has just hired of Mr. Samuel Thorne (of Thorndale, N. Y., one of the largest buyers at the great Tortworth sale, seven years ago, a young bull, the '*5th Duke of Thorndale*' by name, a son of '*Duchess* 66' (for which 700 guineas were paid at that sale,) by 'Grand Turk,' bred by Mr. Bolden, and sold at Mr. Ambler's sale for 300 guineas.

Mr. Robinson, of Clifton Pastures, and Mr. C. Howard, of Biddenham, have also hired of Mr. Thorne, the '*2nd Duke of Thorndale*,' got by '2nd Grand Duke' (a son of the 600 guinea cow at the Tortworth sale), out of 'Duchess 71,' a daughter of 'Dutchess 66' (the 700 guinea cow just named), by the Duke of Glocester.'

Here we have the pure 'Duchess' blood crossing and re-crossing the Atlantic for the improvement of herds on both sides of it; and while enormous sums are paid for the hire of such bulls, there is no reason why the cost of transit and of insurance should stand in the way of a still more frequent interchange of good offices of this kind.

Apricot's Gloster.

We observe in a recent number of our excellent cotemporary, *The Rural New Yorker*, a fine wood engraving of this handsome Shorthorn Bull, bred by Mr. S. P. Chapman, of Madison County, N. Y., and owned by Messrs. Butts & Cass, Onondaga county, calved Jan. 15, 1858, got by Duke of Gloster out of imported Apricot. He is described as a very promising animal, richly imbued with the Bates' blood, Kirk-leavington, England.

Mr. Chapman was for a number of years a distinguished short-horn breeder, and is well known and much respected in Canada. About two years since, being appointed to a responsible county office, he sold ont the greater part of his herd, a number of very fine animals, which passed into the hands of other breeders.

Manure from the Air.

It is well known that ammonia is the most valuable constituent of Peruvian guano, and that farmers pay a high price for this substance, with which they suplement the manure of the farm. Large leaved plants derive a considerable proportion of the nitrogen which they contain from the ammonia of the atmosphere; fur this substance exists in the air, though the relative amount, as compared with the other constituents of the atmosphere, is but liitle more than appreciable. Now, nitrogen forms four-fifths of the weight of the atmosphere, and nitrogen, by combining with hydrogen in the proportion 17 to 3, forms ammonia; hydrogen is a constituent of water; and if a cheap method of separating it from this fluid and combining it with the nitrogen of the air were discovered, the production of ammonia upon a large scale might be carried on, and the farmer supplied with the most valuable, and, at dresent the most costly of the various manures he employs, Efforts in this direction have been made for several years past, and it would appear that success has now been attained. Two French chemists (M. M. Margueritte and De Sourdeval), have lately communicated to the French scientific journal a paper on this subject, of which the following is an *epitome:*—

Since the remarkable labors of Messrs. Liebig, Schaltenmann, and Kuhlmann, on the fertilising action of ammonical salts, the production of ammonia at a low price has become a problem of the highest interest. But to arrive at this result it is necessary to obtain the nitrogen elsewhere than in the nitrogenous matters which may, for the most part, be employed directly as manures, and of which the limited quantities and elevated price permit only a restricted use.

Atmospheric air is an inexhaustible and costless source of nitrogen. However, this element presents so great an indifference in its chemical re-actions that, notwithstanding the numerous attempts which have been made, chemists have not heretofore succeeded in combining it with hydrogen so as to produce ammonia artificially. The result, so long desired, has been reserved for M. M. Margueritt and De Sourdeval, who have obtained it by employing an agent of which the remarkable properties and neat and precise reactions have permitted them to succeed where others had failed. This agent is baryta of which notice has recently been taken on account of the applications that M. Kuhlmann has made of it in painting, of which no person suspected the part that it was to be called to play in the development of the agricultural riches of our country. The manufacture of ammonia is based on a fact entirely new—the cyanuration bairum. It had been believed until the present time that potash and soda alone had the properties of determining the formation of cyanogen; that the earthy alkaline bases—bnryta, for example—could not, in any case, from cyanides.

Messrs. Margueritte and De Sourdeval have ascertained that this opinion is entirely erroneous, and that baryta, much better than potash or soda, fixes the nitrogen of the air or of animal matters in considerable proportions. It is already understood that for the preparation of Prussian blue the cyanide of barium presents great advantages over that of potassium, for the equivalent of baryta costs only about the one-seventh of that of Potash. Thus do we find practically and really obtained the result first announced by Desfosses, and vainly pursued in France and England—the manufacture of cyanides from the nitrogen of the atmospheric air. This solution, so important, depends on the essential difference which exists between the properties of baryta and those of potash; the first is infusible, fixed, porous, and becomes deeply cyanuretted without loss; the second is fusible, volatile, and becomes cyanuretted only at the surface, and suffers from volatilisation a loss which amounts to 50 per cent. After the cyanide of barium was obtained, the grand problem for Messrs. Marguerritte and De Sourdeval to resolve was the transformation of the cyanide into ammonia, by means at the same time simple, rapid, and inexpensive. The following is the operation:—

"In an earthen retort is calcined, at an elevated and sustained temperature, a mixture of carbonate of baryta, iron filings in the proportion of about 30 per cent., the refuse of coal, tar, and sawdust. This produces a reduction to the state of anhydrous baryta, of the greater part of the carbonate employed. Afterwards is slowly passed a current of air across the porous mass, the oxygen of which is converted into carbonic oxide by its passage over a column of incandescent charcoal, while its nitrogen, in presence of the charcoal and the barium, transforms itself into cyanogen, and produces considerable quantities of cyandine. In effect, the matter sheltered from the air and cooled, and washed with boiling water, gives with the salts of iron an abundant precipitate of Prussian blue. The mixture thus calcined and cyanuretted is received into a cylinder of either cast or wrought-iron, which serves both as an extinguisher and as an apparatus for the transformation of the cyanuret. Through this cylinder, at a temperature less than 300 deg. (centigrade) is passed a current of steam, which disengages, under the form of ammonia, all the nitrogen contained in the cyanide

of barium. It is impossible to foresee all the results of this great discovery. Among other things, it suggests the production of nitric acid from the air by oxidising ammonia.—*Irish Agricultural Review.*

GUANO.—M. Boussingault, to whom we are indebted for many valuable contributions to the literature of agriculture, has recently presented a paper to the French Academy on the origin and nature of Guano, from which we extract the following:—

The deposits of guano (*huano de pajaro*) extend from the 2nd to the 21st degree south latitude along the coast of Peru. Those which lie beyond these limits are much poorer in ammonaical compounds than the former, and are not, therefore equal to them in value. Guano is generally found deposited in small promontories or on cliffs; it fills up crevices, and is in general to be found in those places in which the birds seek shelter. The rocks of this part of the coast consist of granite, gneiss, syenite, and porphyric syenite; the guano which covers them generally exists in horizontal layers; but sometimes the latter have a strong inclination, as at Chipana for instance, where they are nearly vertical.—The guano deposits are generally covered with an agglomeration of sand and saline substances, called *eatiche*, which the labourers first remove before they begin the attack on the guano. In some places, as at Pabellon de Pica, and at Punta Grande, the deposits lie under a mass of sand descended from the neighbouring mountains; and on this subject an observation made by M. F. de Rivero is extremely curious. At the places above mentioned the lowest guano deposits are covered with a stratum of old alluvial soil; then comes another layer of guano, and then a stratum of modern alluvian soil. To understand the importance of this fact, our readers must keep in mind that the age of modern alluvians does not extend beyond our historical times, while old alluvians date from the period immediately preceding that at which man first began to inhabit the earth; so that the guanaes, or cormorants and other allied tribes of birds which deposit guano, must have existed thousands of years before man, seeing that the inferior layer of guano is several yards (sometimes from 15 to 20) in depth, and the old alluvian crust above it has a thickness of upwards of three yards. To explain the immense accumulation of guano in those regions, M. Boussingault observes that there has been a combination of a variety of causes favorable both to its production and preservation. Among these causes must be reckoned a dry climate; a ground presenting a vast number of chinks, fissures, and caverns, where the birds can rest, lay their eggs, and hatch them without being disturbed by the strong breezes from the south; and then abundance of the food suited to them. No where are fish so abundant as on this coast, where whole shoals of them are cast upon the shore even in fine weather. Antonia de Ulloa states that anchovies especially are in such abundance here as to defy description; and he gives a good account of the manner in which their numbers are diminished by the myriads of guanaes which are seen sometimes flying in countless flocks, like clouds intercepting the sun's rays, and sometimes darting into the sea to catch their prey. According to M. Boussingault's calculation, 100 kilogrammes of guano contain the nitrogen of 600 kilogrammes of sea fish; and as the guano deposits, before they began to be worked, contained 378,000,000 of metrical quintals of guano, the birds must have consumed 2,268,000,000 of quintals of fish.—*Irish Agricultural Review.*

Horticultural.

Fruit Growers' Association of Upper Canada.

We had expected to have been furnished with a special report of the recent meeting of this Society at Hamilton, but not having received at the time of going to press, we make use of the following communication and report supplied to the Toronto *Globe* by our friend D. W. Beadle, of St. Catherines:—

This Association held its general annual meeting on the 16th and 17th January, at Hamilton. The officers chosen for the ensuing year are as follows:—President, Judge Logie, Hamilton; Vice Presidents, George Leslie, Esq., Toronto, D. W. Beadle, Esq., St. Catherines; Secretary, J. Hurlburt, LL.D., Hamilton; Treasurer, John A. Bruce, Esq., Hamilton; Committee on Orchard Fruits—Messrs. Leslie, Beadle, and Murray; Committee on Small Fruits—Messrs. Arnold, Gray and Meston.

The objects of this Association as expressed in its constitution, are the advancement of the science and art of fruit culture, to be accomplished by holding meetings for the exhibition of fruits, and for the discussion of all questions relative to fruit culture, and likewise by collecting, arranging, and disseminating useful information in relation thereto.

To this end, every one who cultivates fruit in any part of the Province, even though in ever so limited a way, is urgently solicited to become a member and to contribute the results of his experience. The adaptedness of different varieties of fruit to different localities, and especially the hardiness with which they withstand the severity of our climate, are subjects of the greatest interest, and could the information on these points alone, which now lies scattered about through the Province, be gathered up

and brought before the Canadian public, it would soon prove a saving of no inconsiderable amount in preventing the useless planting of certain varieties of fruit in localities where they will not flourish. The experience brought out at the recent meeting in Hamilton is sufficient to show the importance of such a society to Canada, and the beneficial results to be anticipated from it, when not only every county but every township in every county shall be fully represented.

Once more then, on behalf of the fruit-growing interests of Canada, permit me to request all who take any interest in the cultivation of fruit to send in their names to the secretary, who will give them due notice of the time and place of meeting, and should any be unable to be personally present, by no means fail to send in to the secretary, in writing, the results of their experience.

Enclosed I hand you some extracts taken from my notes of the recent meeting of this Society, which will serve to show you its practical workings and the nature of the information there elicited. I have made them as brief as possible, that they might not occupy too much of your valuable space.

After the transaction of some routine business and listening to some reports on fruit culture, and an excellent address from the acting President on the culture of the grape, the committee on orchard fruits introduced a list of apples and pears for discussion, with a view to bring out the experience of different cultivators, which resulted as follows:—

Early Harvest, quality "best of its season." Tree perfectly hardy at Toronto, St. Catherines, and Grimsby; somewhat tender at Paris.

Red Astracan, quality very good, beautiful appearance, sells well in Toronto market. Tree very hardy in all parts of the Province.

Dutchess of Oldenburg, quality, "very good," very handsome. Tree perfectly hardy everywhere, very prolific, bears young and every year.

Sweet Bough, large size, best sweet apple of its season, valuable for market. Tree hardy at St. Catherines and at Paris; tender at Toronto.

Early Joe, quality best. Tree very hardy and a very slow grower. Most desirable as a dwarf in gardens.

Early Strawberry was found to a very small apple, and the tree a very shy bearer.

Primate, quality "best," hardy so far as known, but the variety had not been very generally tested.

St. Lawrence, quality "very good" at Toronto, best at Paris, "variable" at St. Catherines, improved in quality to the northward. Tree perfectly hardy in all the Province and a good bearer.

Fameuse, or *Snow Apple*, highly esteemed in all Canada as a desert fruit. Tree perfectly hardy.

Fall Pippin, quality "very good." The tree had been found to be tender in some localities and seasons about Toronto.

Keswic Codlin, quality "very good cooking." Tree very hardy, and an early bearer.

Hawthornden, "good cooking," very handsome. Tree very hardy and bears very young.

Golden Sweet, "very good" sweet apple, valuable for market. Tree very hardy and a good bearer.

Gravenstein, quality "best," best in all respects. Tree hardy at Toronto, Paris, and St. Catherines.

Jersey Sweeting, "best" fall sweet, valuable for market. Hardiness of the tree not yet fully tested.

Baldwin, "best" quality, profitable for market; keeps well until spring. Tree an early and great bearer, but tender to the northward.

Rhode Island Greening, one of the most valuable and profitable market fruits. Tree begins to bear young and is very prolific, but quite tender to the north and particularly at Paris.

Spikenburg, quality "best," tree hardy, very slender grower. A moderate bearer at Toronto, Paris, and St. Catherines, a good bearer at Hamilton and Niagara.

Ribston Pippin, quality "best," for both table and cooking, valuable for market. Tree hardy everywhere and a good early bearer.

Roxbury Russet, quality "good," valuable for its long keeping. Tree hardy at Toronto and St. Catherines, somewhat tender at Paris.

American Golden Russet, quality "very good," size but a little larger than the Pomme Grise, fine long keeper, valuable for market. Tree hardy, a good grower and good bearer.

Northern Spy, quality "best," size large, a long keeper, hangs well on the tree. Tree perfectly hardy everywhere, somewhat tardy in coming into bearing, but after it has begun is an excellent bearer, and as it always puts forth its blossoms after all other apples, it frequently escaped late frosts that seriously injure the crop of other varieties.

Swaar, quality "best," succeeds in a warm, dry, rich soil. Tree very tender at Paris, and a poor bearer at Toronto.

Pomme Grise, quality "best," small russet, fine for eating all winter, and will keep until July. Tree very hardy and a good bearer in all parts of the Province.

Yellow Bellflower, quality "very good," but the tree had proved a very poor grower and a very shy bearer.

Belmont, a new variety, very good for both the table and cooking; tree very hardy at Toronto, and a good bearer.

Wagener, a new variety of great promise, quality "best;" tree very hardy, very prolific, and an early bearer.

Talman Sweet, best winter sweet apple; tree very hardy. At Toronto the fruit was apt to be small and scabby.

Colvert, quality "good cooking," very large. This variety received the first prize of the Provincial Agricultural Association, last fall, as the best baking apple. Hardiness of the tree not fully tested.

Vandevere, this flourished best on dry, light soils. At Toronto the fruit was so scabby as to be worthless.

Rambo, quality very good, keeps until January. Tree very hardy and prolific. At Toronto the fruit was apt to be small and scabby.

PEARS.

Madeline, the best earliest pear.

Osband's Summer, quality "best," size medium. The tree hardy at Toronto and St. Catharines.

Tyson, quality "very good," size medium. Tree perfectly hardy at Toronto, St. Catharines, Hamilton and Paris.

Belle Lucrative, quality "best," tree hardy and very prolific on both the quince and pear stock at Hamilton and St. Catharines; tender and a poor bearer at Toronto and Paris.

Bartlett, quality "very good," large, handsome. Tree tender at Toronto and Northward, hardy at St. Catarines, Hamilton and Paris; bears young and abundantly on the pear stock.

Beuvre Giffard, quality "best," medium size. Tree grows slowly, but is perfectly hardy.

Louise Bonne de Jersey, an universal favorite at Toronto, Hamilton, and Paris. Tree perfectly hardy and a great bearer.

Flemish Beauty, very much esteemed at St.-Catharines, Toronto, Hamilton, and Niagara, size large. Tree very hardy.

White Doyenne, quality "best." Tree hardy at Toronto, St. Catharines, and Hamilton, but somewhat tender at Paris. At Toronto the fruit was too small to be good.

Seckel, quality "best," fruit quite small, tree small, but bears abundantly, and is hardy throughout the Province.

Duchess D' Angouleme.—Is not hardy in Hamilton, and in that neighborhood does not set its fruit well, though it blossoms abundantly. At Toronto it is only half hardy, but bears tolerably well. At Paris it was hardy and the fruit large, and at St. Catharines hardy and fruited abundantly.

A list of small fruit was also reported by the Committee on small fruits, but there was not time before the hour fixed for adjournment arrived to discuss it fully.

STAWBERRIES.

Wilson, excellent flavor, enormous bearer and very hardy.

Jenny Lind, early, large and prolific, one of the very earliest.

Bun's New Pine, finest in flavor of all the strawberries, hardy and a good bearer.

Triomphe De Gand, had failed at Paris, but at Toronto, Hamilton, and St. Catharines had proved hardy and one of the most promising now varieties.

Hooker, much admired for size, beauty and flavor, but tender in many localities and liable to winter kill.

RASPBERRIES.

Franconia, quality "very good," being dark red, prolific, the most hardy variety, and valuable for market.

Brinckle's Orange, was found tender at Toronto; tender with Mr. Holton, of Hamilton, but Mr. Freed, of Hamilton, had left it out unprotected for the past three years, and found it quite hardy; flavor "good;" not so highly flavored as the yellow Antwerp.

Fastolf, not very hardy at Toronto, but occasionally bore large crops there. At Paris and Hamilton very tender.

Knevtt's Giant—Mr. Holton, of Hamilton, had grown it upon poor light soil, and it proved a good bearer; berries large to very large; flavor "best," and nearly hardy; not quite as hardy as Franconia.

The hour for adjournment cut short the further discussion of these fruits.

D. W. Beadle.

St. Catharines, 1861.

Attention to Fruit Trees In Winter.—Much injury is frequently done to young fruit trees in winter by the gnawing of mice; and as there is now a thick covering of snow on the ground, a close look out is necessary in order to prevent the evil. Mice work under the snow, and when trees are mulched, or their stems surrounded by long grass, their destructive operation in peeling the bark is very much facilitated. Some protect the stems of trees near the ground by hay or straw bands, which, however, are very liable to be eaten, and often prove a failure: others use old stove pipes. But if the snow be shovelled away from the stem, or closely trodden down for some distance around, as soon as it falls, very little injury can be done by mice, since they cannot burrow in a compact substance. We have known this method to be effectual in numerous instances and to save many a fruit tree from irreparable injury. When it is considered how long a time is required to raise an orchard, and the expense and anxiety involved in the operation, none surely will grudge a little extra care during the inclement weather of our winters to obviate the threatened evil in the way before described.

Covering Strawberries.—The soundness of the following advice, taken from the *American Agriculturist*, we have verified in our own experience in Canada, and also in the practice of others.

We can have too much of a good thing, as many tyros in fruit culture have found out to their cost in this operation. Reading that strawberries are benefitted by a mulch in winter, they wrap them up as they would babies in bed, hardly leaving a breathing hole. Three and four inches of stable manure, or leaves, are spread over them at this season, and the snows press down

the litter, so that the leaves and crowns of the plant decay. They come out in the spring black and dead.

Nature gives us a profitable hint as to the proper amount of protection for this plant. It grows among the grasses, and the old fog that forms after mowing, where the fields are not pastured, screens them sufficiently from the cold. If the leaves are covered at all, it should only be with loose litter through which the air can circulate freely. With this precaution, we have never found any difficulty in the winter-killing of the plants. It is better to manure them at this season, than in the spring. What is spread upon the surface now, leaches down with the winter rains, and is equally distributed among the roots. Look occasionally to the plants to see if the leaves are green.

Keep House Plants Clean.—A writer in the London Cottage Gardener relates an experiment showing the advantage of keeping the leaves of plants free from dust. Two orange trees, weighing respectively eighteen ounces and twenty ounces, were allowed to vegetate without their leaves being cleaned for a year; and two others, weighing nineteen ounces and twenty and a half ounces, had their leaves sponged with tepid water once a week; the first two increased in weight less than half an ounce each, while of the two latter, one had increased two and the other nearly three ounces. Except the cleansing, the plants were similarly treated.

Transplanting Rhubarb.—Rhubarb may be transplanted either autumn or spring. Rather the best way is to divide the roots in the autumn, plant in a rich, well-manured soil, and cover with coarse manure. In the spring, as soon as growth commences, this manure may lightly be forked under, or allowed to remain on the surface.

A New Tomato.—The *Gardener's Chronicle* of November 24 thus notices a new tomato recently produced in France:—"It appears in a circular from Messrs. Vilmorin that they are offering seeds of *a new upright tomato*, which requires no support. This plant is said to be entirely different from the kinds previously known. Its stem is two feet high or more, quite upright, and so remarkably strong and stiff as to be strictly self-supporting—a highly commendable quality. It branches less than the common great red tomato, is less leafy, and does not want so much pinching. The leaves are rather curled, much puckered, very firm, and closely placed on the sturdy branches. Their colour is a remarkably deep shining green. It does not bear so freely as the common tomato, but its fruit, which is of the same colour, is larger and more regularly formed. In earliness, it is intermediate between the Early Red (*rouge hative*), and the Great Red (*rouge grosse.*) It was raised from seed by Grenier, the gardener of M. de Fleurieux, at a place called the Chateau de Laye, wherefore it is to he called the *Tomate de Laye.*"

We cannot say that this will be a very great acquisition, but it is worthy of trial, and we shall endeavour to obtain seeds for the purpose. A little brush placed around the plant when young, is all our common tomato needs, and if the earth is drawn well towards the stem, forming a mound, the branches may lay on this, where the fruit will ripen earler than if more exposed. Shortening the tops, or cutting out a portion of the shoots, will prevent too much shade. Whether particularly valuable or not, this upright tomato will be curious.

Buttoning of the Cauliflower.—The buttoning of the Cauliflower has plagued many a gardener; and here the plant having been imprudently planted too early, and in too rich a soil, is kept through the winter in the close atmosphere of a frame, from which it is transferred in a gouty or plethoric state, and what we gardeners term "drawn," to the open ground to face a March wind and sun; the consequence of course is, that the growing principle is suddenly arrested, and the premature formation of a blossom is produced. The above hint may be useful at this season, when many Califlower plants will be placed in their winter quarters: let not those who have charge of them kill them with kindness.—*Gardener's Chronicle.*

"The Camelia Japonica," the California *Farmer* says, "will grow in our gardens most perfectly as an ornamental tree, and bloom perfectly in our open border. The only injury that can affect them is the burning sun in summer." It recommends planting under clusters of large trees to obtain protection from the sun.

The Allen Raspberry.—Mr. L. F. Allen, of Black Rock, has an excellent article in Meehan's Gardener's Monthly, descriptive of his red raspherries.

Mr. Meehan says that a neighbor of his had a little bed of the Allen raspberry, under, we believe, an hundred feet square; sold over $200 worth of fruit, as he informed us at the fruiting season. Soil is low and damp. This will do for the Allen raspberry.

Domestic.

Sewing Machines.

Editor of the Ariculturist

Whilst every number of your paper teems with recommendations to the Farmer, of tools and machinery, to lighten and improve the labors of the farm, little is said of tools and implements to reduce or lighten the toil of the farmer's wife and daughter. Now, Mr. Editor, as the wife of a farmer, you will allow me these few lines to say a word in favor of Sewing Machines. At the

last Provincial Show at Hamilton, my husband bought from Mr. Allen, who had a lot on exhibition, one of the N. American family sewing machines made in Canada; and this machine has been of such great comfort and service in my large family, that I cannot refrain from recommending it or some similar machine to all farmers' families. With this sewing machine the whole sewing of my house can be done in half the time it required formerly, and with infinitely more pleasure. To many wives it must be tiresome to hear the farmers say, when they walk in early in the evening from their work, that they have harvested ten or twelve acres more easily than they could have done two before the aid of machinery, or that they have thrashed out their whole crops in a few days that used to keep them a whole winter flailing and fanning, and at the same time see their better halves sew, sew, stitch, stitch, night after night, and all the year round, winter and summer, until near midnight. If the labor-saving machines on the farm are so very beneficial, a farmer with their assistance should soon be enabled to buy machinery for household purposes and thereby add to the wife's comfort and happiness, and if it should only allow her a little extra time for reading and improving her mind she would thus make the more interesting and agreeable companion. With the sewing machine I have now in use can be sewn with equal facility the finest lawn or the coarsest cloth. Yours, &c., A Farmer's Wife.

[It is not often, we regret to say, that we are favored by contributions from our *fair* readers, and therefore we have the greater pleasure in giving insertion to the above letter. The plea is a reasonable one, and we certainly think that the labors of the household have as good a claim to be lightened by every available appliance of art or mechanism as those of the field and barn. We do not suppose that the amiable temper and agreeability of the farmer's wife and daughter, either in respect to the male portion of their own family or occasional visitors, would be in the least damaged by having a few more leisure hours on their hands occasionally, in which to amuse or interest themselves. We hope that the cares of the "large family" of our kind correspondent, will not prevent her again contributing to our columns, and that other "farmers' wives and daughters" will be encouraged to imitate so good an example.—Ed.]

Cabbage Heading in Winter.

Choose some dry spot—if it be a sandy one so much the better, and if it be sloping a little better still—and dig a trench sufficiently wide to admit the cabbages, and a foot or 18 inches deep. Pull the cabbages up by the roots. Invert them (head down,)close the leaves together and place them in the trench, having previously placed a little dry straw in the bottom. After you have thus filled your trench with the cabbages, press some dry straw on each side of them so as to bring and keep the leaves together. This done, place straw over the roots and place a board on each side, one edge resting on the edge of the trench and the other side meeting the opposite board on the top, thus forming a roof. Over these throw the earth. Dig trenches on each side to convey any surface water away that may fall during the winter. Early in the Spring they may be opened, and if no water has got in among them, most, if not all the heads will be found to have closed up so as to be quite solid. —*Maine Farmer.*

How to Cook a Beefsteak.—The following were the rules adopted by the celebrated "Beefsteak Club," started in England in 1734:

Pound well your meat until the fibres break;
Be sure that next you have, to broil the steak,
Good coal in plenty; nor a moment leave,
But turn it over this way and then that.
The lean should be quite rare—not so the fat.
The platter now and then the juice receive,
Put on your butter, place it on your meat,
Salt, pepper, turn it over, serve and eat.

The Dairy.

Management of Cream in Cold Weather.

For some reason not yet known, cream skimmed from milk in cold weather, does not come to butter when churned, so quickly as that from the same cow in warm weather. Perhaps the pellicles, which form the little sacs of butter in cream, are thicker and tougher. There are two methods of obviating this trouble in a great degree. One is to set the pan of milk on the stove, or in some warm place, as soon as strained, and let it remain until quite warm—some say until a skim of cream begins to form on the surface. Another mode recommended, is to add a table spoonful of salt to a quart of cream when it is skimmed. Cream thus prepared will generally come to butter in a few minutes when churned. It is thought the salt acts upon the coating of the butter globules and makes them tender, so that they break readily when beaten by churning. —*Maine Farmer.*

Churning Milk or Cream Alone.—The following report of an experiment by Mr. Zoller, a dairyman of St. Lawrence County, is from the Transactions of the New York State Agricultural Society for 1859:

Mr. Zoller's cows are what are called native, crossed with Durhams.

We desired Mr. Zoller to make an experiment as to the two modes of making butter, so as to furnish us with the result. He has done this, and the result is as follows:

September 10. Took 208 quarts of milk and strained it into pans—set till the cream had thoroughly risen—skimmed and churned cold—*produced* 17½ *lbs. of butter*, ready for packing.

Sept. 11. Took 208 quarts of milk, strained into the churns, stood till sour, but not loppered, churned and treated in the same manner; gave 19¼ lbs. *butter* ready for packing; being a gain of ten per cent. over churning the cream.

This Mr. Zoller believes, is about the fair difference between the two methods; and if uniformly this result is secured, it certainly is an important advantage.

It will be seen by this experiment that 10 62-77 quarts of milk produced a pound of butter, which is a much less quantity of milk than the average returns of our dairies. Mr. Zoller is of the opinion that this is about the average amount of milk required under his system, under ordinary circumstances; but the trial, during the entire season, would probably alter this average.

We think there is enough furnished by this experiment of Mr. Zoller's, which has been continued for some time past, to lead others carefully to test this practice. If *ten per cent.* can be secured over the ordinary method of churning the cream, and if an *equally good quality of butter can be made*, it will need little urging to induce our dairymen to give attention to it.

The Poultry Yard

A Few Words on Hatching and Rearing Poultry.

I would recommend all parties desirous of procuring a superior breed of birds, at the least possible expense, to obtain two or three barn-door hens about to sit, then buy from some neighbor, having the desired breed, fresh laid eggs, allowing from eleven to thirteen to each hen, according to size; should more than thirteen eggs be placed under a hen, and the weather prove cold, the chances are that one-third of the clutch, at least, are spoiled. If an out-house or cellar can be used for the nest-house, so much the better, provided the floor is slightly moist. In the darkest corner place a good handful of oat-straw; and to better form a nest and prevent the eggs rolling out when the hen moves, a row of bricks all around. In such a place the chickens will shell out strong and healthy. Many persons may wonder at my recommending a moist place; but let it be remembered, if you leave a hen to herself, she will choose for the brooding-place a spot under a bed of nettles, a gap in a hedge, inside a stack of faggots, or similar damp places; all being places nature has pointed out as the most suitable, and apparently for this reason: the germ of the egg floats uppermost within and against the shell, in order that it may meet the genial warmth of the breast of the fowl. We must, therefore, in hatching, apply most warmth to that part only; the egg being supplied with only a limited quantity of moisture, is thus arranged to prevent evaporation from a large surface, as the egg is only very warm at the part in contact with the fowl, until the blood-searching nourishment for the embryo, have surrounded the inner surface of the shell, when the whole egg becomes gradually warm, and eventually of an equal temperature.—*Cottage Gardner.*

Veterinary.

Contraction of Horses' Feet—Cause and Remedy.

The tendency of a horse's feet, in a healthy condition, is to expand whenever the weight of the body is thrown upon them. Being a very complicated piece of mechanism, they are very easily disarranged, and once out of order are difficult of repair; hence the necessity of preserving them in a sound condition.

Contraction is caused—1st, by cutting away the bars of the feet, which are the mainstays for the support of the quarters; 2d, by (opening the heels, as the smith calls it) cutting away a portion of the frog, in consequence of which the moisture of the frog becomes absorbed, losing its elasticity, and destroying its function, thus exposing the feet to injury by concussion; 3d, by standing upon plank floors; 4th, by improper shoeing.

An ordinary observer will, upon an examination of the common shoe, notice that it inclines from without inward at the heels, thus forming a concavity for the feet to rest in; the consequence is a lateral resistance to the expansion of the hoofs, when the weight of the animal is thrown upon them. The effect of this resistence if to force the heels together, creating pressure upon the sensitive parts within the horny case; establishing fever, by which the moisture of the hoofs is rapidly absorbed, rendering the hoofs hard, brittle, and liable to crack, and frequently causing corns, navicular joint lameness, bony deposits to be thrown out from the lateral wings or processes of the coffin bones, rendering the animal permanently lame or unsound. These are but a few of the bad effects arising from contraction; enough, however, to serve our purpose at present.

Remedy—Preserve a level bearing by making the shoe perfectly flat on the quarters, so as not

to interfere with the expansion of the feet. Should contraction already exist to a considerable extent, bevel the shoe slightly outward at the heels, in order to facilitate expanson. Care should be taken not to bevel too much, or bulging of ihe lower part of the hoofs at the quarters will be the result. The shoe should in all cases be forged and not twisted, as is sometimes done to save trouble by the bungling smith. Proper applications, to soften the horny parts and promote elasticity, should also be used. Such preparations are put up in the form of hoof ointments.—*Scientific American.*

Spaying A Mare.

Dr. Dadd, V. S., infors us that he has recently performed the novel operation of spaying a mare (removing the ovaries). The mare was six years old, and belonged to Charles H. Ballark, of Hartford, Vt. We believe this is the first case of the kind in this country, if indeed it is not the first one ever tried, and Mr. Ballard is entitled to much credit for offering so valuable an animal for the benefit of science, as it has beed generally supposed that an operation of this kind would prove fatal. The animal was under the influence of sulphuric ether, and the operation proves entirely successful, ten having elapsed since it was performed. The object to be attained in this particular case, was to render the mare more docile, as she had heretofore been nearly unmanageable during her periods of heat. Physiologists are of opinion that removing the ovaries, if successfully performed, will render the animal mild and gentle.—*Am. Agriculturist.*

Foot-Rot in Sheep.

This disease, although not common in Canada, compared to countries having wetter soils and a warm humid climate, is nevertheless occasionally troublesome. In Britain it is apt to prevail in wet seasons, and on land that is not drained. Paring the hoof and applying lunar caustic is there the ordinary mode of treatment. As soon as the disease manifests itself by the animals becoming lame, they should be immediately removed to fresh pasture, in a drier situation; and the greatest care exercised in not allowing sound sheep to mix with such as are affected, or to occupy the ground on which they have been pastured for a considerable time, and till atmospheric and other conditions have been changed. This disease has been very prevalent in the British Islands during the extraordinary wet weather of last year, and many flocks were seriously injured thereby.

A correspondent of the *Rural New Yorker* recommends the following mode of treatment, which is said to have proved thoroughly efficacious wherever it has been fairly tried:

Procure a shallow trough eight or ten feet long, and about eight inches wide in the bottom. Place it between two yards, in such manner that sheep in passing from one to the other will be obliged to traverse the bottom the whole length; which is best done by making a tight board fence from the top of each side of the trough and the whole length thereof, a little inclined outward, but not enough so as to enable the sheep to get a foothold upon the inclined plane and thus escape the bottom of the trough. Dissolve ten pounds sulphate of copper (blue vitriol,) in about four gallons of water, put it in the trough and drive and call the sheep from one yard to the other through the trough, every other day, until they have wet their feet in the solution five or six times, and a cure will be effected. The liquid may be drawn off and saved for future use.

I prefer this mode for the reason that a hundred can be doctored in this way in the time requisite to handle one sheep when they are taken separately, and I believe it equally effectual.

Remedy for Lice in Farm Stock.—The following remedy I have used and found to be a certain cure, and one which I am satisfied will not fail, if properly tried:—Take two ounces Venice Turpentine, one ounce of Red Precipitate, eight ounces Fresh Butter; take the turpentine and put it into a smooth vessel, pour water upon it and stir it well, then pour off all the scum that arises on the top, and continue this process until it becomes like cream, or wax, and then add the other ingredients and mix them well before using. One ounce of the above will cure the itch and kill lice of all descriptions on man and beast, and the old sow too.—*John Eversole, Brownsville, Licking Co.*

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

Continued from page 52.

TOWNSHIP BRANCHES.

Aldborough.—One hundred and ten members; amount of subscriptions collected and public grant, $258.75; balance from previous year, $11.25; received from sale of Bulls and other sources, $191.14; total receipts, $355.14. Paid in premiums, $146.93; sundries, $47.83; balance in hand, $153.21.

Extract from Report:

In the year 1855 the society bought five thorough bred bulls, which they kept for two

years and then sold them to individuals residing in the township. This circumstance has done much towards the improvement of stock in the district.

The soil is sandy for the most part, but there is some good clay and gravel land in the northern part of the township. All seem to agree that sheep farming, embracing the growing of roots and spring grain, is best adapted to the soil.

The wheat midge, has made great ravages in the wheat crops for some years, so much so that there is perhaps not more than five hundred acres at present under fall wheat in the whole township.

South Dorchester.—Fifty-seven members; subscription, $58; share of public grant, $41.70; total received, $99.70. Paid in premiums, $79; expenses, $13.84; balance in hand, $6.86.

Malahide.—Forty-nine members; subscription, $49; balance from previous year, $53.75; grant, $36.52; total received, $139.27. Paid in premiums, $60.50; expenses and sundries, $51.73; balance in hand, $22.04.

Southwold and Dunwich.—Eighty-six members; amount of subscription, $89; balance on hand from 1859, $208.40; received from sale of clover seed, $21.15; stock, $16; public grant, $65.60; total received, $400.15. Paid for keeping bulls, $165.40; paid for clover seed, $19.20; premiums, $42.25; expenses, $58.84; balance in Treasurer's hands, $114.46.

Yarmouth.—One hundred and twenty-nine members; amount of subscriptions, $129; balance from previous year, $62.11; grant, $93.19; total receipts, $284.30. Paid in premiums, $228.87; expenses, $27.33; balance in Treasurer's hands, $28.10.

ESSEX.

County Society.—Eighty-one members; amount of subscriptions, $90; balance from late Treasurer, $60; deposited by township societies, $403; public grant, $599.96; total received, $1093.56. Paid township societies, $761.67; premiums, $229.26; expenses, $65.12; balance in hands of Treasurer, $37.51.

Extracts from Report:

The annual fair was held at Amherstburgh this year, and though not so numerously attended as on former occasions, still we think the articles shown were of a very superior quality. The grain products, such as wheat, corn, and oats, were the best on the whole that have ever been shown in this county. The root crop was very good, particularly potatos, not only from the variety of sample, but also from the fine and generally healthy appearance. Live stock were not so numerously represented as on former occasions, but the cattle and horses that were on the ground presented quite a creditable appearance. The sheep in quality, we think, excelled any former exhibition of this society.

The Secretary has taken the trouble to address queries to prominent farmers in the different townships, as to the average yield and the amount of the grain and root crops of the county, but the replies thereto are so inaccurate as to preclude the possibility of arriving at anything like a correct conclusion or estimate of our crops; but we trust by another year the society may be able to arrive at a comparatively correct estimate of the various crops or products of the county. From what information we possess, we are strongly of opinion that more attention will have to be paid to the manuring and general cultivation of the soil than has been heretofore the case. Some of the old soils which have been forty or fifty years under cultivation, and have produced excellent crops of wheat during that time, can now scarcely yield a crop sufficient to defray the expenses of cultivation; and this decrease in the yield has not been caused by either the weavel or rust, but by the want of vegetative power in the soil of sufficient strength to produce a crop. And we feel assured that unless the heavy soils of this county are deeper ploughed, better drained, and better manured, they will, year by year, decrease in productiveness. To have the land deeper ploughed will require much heavier teams than are at present in use by the farmers. The Canadian pony may suit very well as a carriage or saddle pony, but it is totally unfit for the thorough cultivation of our heavy soils; and our Township Societies in aiding the introduction of a heavier breed of horses are doing a work which ought to command the respect and assistance of the farming community. The necessity of drainage is so apparent to every one that it needs no notice from us further than in suggesting to the Township Councils the propiety of cutting out and keeping open such leading ditches as would facilitate the draining

into them of farms which could not be drained by any other means. Under the head of manuring we might mention the fact which has been ably stated in other quarters, that unless the soil receive nearly as much vegetable matter, in the shape of manure, as is extracted from it by yearly cropping, it must regularly decrease in vegetating power. Raising stock would very much help the farmer to keep up the productiveness of the soil, and also prove a profitable investment. Why should not this fine county send its car loads of cattle and hogs to the eastern market as well as the farmers of Michigan and Illinois. Our soil is as good, and our climate about the same, and all it requires is determination and energy in the right direction to accomplish great results. Only let our farmers rally round the Township Societies, and get them to import the best breeds of every kind of stock and we shall soon feel the effect of it in the general prosperity of the county. But no such result can be arrived at as long as the farmers in the neighbourhood of Windsor and Amherstburgh are spending the greater proportion of their time in the traffic in steamboat wood, a traffic which does not pay, but yearly reduces all those engaged in it in worldly circumstances and makes them more and more dependent on the merchants. If the same amount of physical labor spent in the wood trade, were spent on the farm, what different results would be seen! Instead of dilapidated looking barns fences and other appurtenances about the farm, as are to be seen at present, we would see every thing in thorough order, and agriculture in general in a more prosperous condition, in proof of which assertion we would refer the members of the society to the farms in those townships which are the furthest away from the localities before mentioned, and whose occupants spend all their time in agriculture instead of the wood trade.

TOWNSHIP BRANCHES.

Colchester.—Seventy-three members; subscription, $73; total receipts, including balance from previous year and share of public grant, $194 98; expenditure, $131; balance in hand, $63.98.

Gosfield and Mersea.—Seventy-eight members; amount of subscriptions, $92; balance from previous account, $37.06; received on account of seeds and stock, $19.53; share of public grant, $81.88; total receipts, $230. 47. Paid on account of seeds and stock, $13.50; expenses, $32.77; balance in Treasurer's hands, $184.20.

Malden and Anderdon.—Eighty-eight members; amount of subscription, $88; balance from previous account, $235.85; share of grant, $78.30; total receipts, $402.15.—Paid for sheep, purchased for society, $103; premiums, $77.97; expenses and sundries, $31.14; balance in Treasurer's hands, $190. 04.

Rochester and Maidstone.—Sixty-six members; amount of subscription, $66; balance from previous year, $14.48; Government grant, $58.74; sundries. $8.62; total receipts, $147.84. Paid on account of purchase and keeping stock for society, $56; premiums, $13; expenses, $14.74; balance in Treasurer's hands, $64.10.

Tilbury West.—Seventy one members; amount of subscriptions, $79; share of grant, $53.40; received from late united society of Rochester, Maidstone and Tilbury West, $10. 75; received from other sources, $46.72; total receipts, $189.87. Paid for stock, $156; expenses, $15.43; balance in Treasurer's hands, $9.84.

Extract from Report.

Average quantity of corn forty bushels to the acre, and in some cases sixty, where the crop has been properly cultivated. Peas twenty bushels to the acre. Peas have done well in this township for two or three years past, being almost free of bugs. Oats forty bushels to the acre, sixty not being an unusual crop. Wheat is very little cultivated since the insect has been so destructive. Stock thrive extremely well, but are subject to a murrain, of which we cannot ascertain the cause. Grass is generally a very heavy corp in this township. Oats, corn and stock are considered the most profitable.

Windsor and Sandwich.—Forty members; subscriptions, $40; grant, $35.62; cash on hand, $75.62. The society propose appropriating the funds in purchase of improved stock.

FRONTENAC.

County Society.—Seventy-four members; amount of subscriptions, $74; balance on hand from previous year, $245.33; deposited by township branches, $168; received from South Leeds Society, $100; public grant, $479.98; total receipts, $1067.31.—Paid insurance on Crystal Palace, $37.50;

paid Treasurer of the Local Committee of the Provincial Exhibition, $740.98; paid for care and fitting up of Crystal Palace and grounds, $91; other expenses, $84.75; balance in Treasurer's hands, $113.08.

TOWNSHIP BRANCHES.

KINGSTON.—Sixty-four members; report imperfect.

LOUGHBOROUGH.—Report very imperfect.

PITTSBURGH.—Amount of subscriptions, $53; balance from previous year, $4.05; share of public grant, $47.59; total receipts, $104.64. Paid Treasurer of County Society, $89.59; expenses, $10; balance in hand, $5.05.

Extract from Report:

The soil in this township is favorable for the production of spring wheat. Over a large portion of the township peas, oats, barley, and the usual root crops, such as potatos, turnips, ruta baga, can be raised with success in moderately warm and not too dry seasons. Indian Corn is a crop not to be depended on, and hay is entirely dependent upon the early rains in May and June. Fall wheat not to be relied upon, owing to the very open winters.

PORTLAND.—There is no statement of receipts and disbursements from this society. The Provincial Exhibition in the County, there was no show held.

Extract from Report:

The soil of this township in the front part, say from the first to the seventh concession, is generally good, being a mixture of clay and loam; the remainder, being seven concessions more, is very much broken by lakes, rocks, and swamps, there being not less than seven lakes. In the last seven concessions the soil is generally black and red sand, mixed with loam and clay. Improved farms in the front, with good buildings, are worth from $25 to $35 per acre; without buildings, worth from $16 to $20 per acre. Land in the back part of the township is worth from $1 to $6 per acre. Rotation of crops is not practised generally, but where it is the results are successful. The average return of various kinds of crops is about as follows:

Fall wheat.....	20	bushels per acre.
Rye.....	15	" "
Spring Wheat.	15	" "
Barley	25	" "
Peas.....	20	" "
Oats.....	35	" "
Indian Corn....	30	" "
Buck Wheat from	10 to 30	"
Potatos from	100 to 300	"

Carrots and mangel wurzel have been raised successfully, but only in a few instances have been tried to any amount.

The average wages of labourers is about from $100 to $120 per year. Mechanics and tradesmen will command from $1.25 to $1.75 per day. Men of all descriptions may find employment here during the summer season.

The crops were not injured by insects this season as much as last, in fact not much at all. Potatos escaped the rot except in a few instances. With regard to cattle, farmers are looking after the Durham breed, and believe them best adapted to this locality. Those farmers who have attempted to fatten cattle have thought the most profitable mode is to purchase them in the spring, let them graze through the summer, and sell them in the fall or early winter. There have been only three breeds of sheep, in addition to the old stock, brought into this township, viz: South Downs, Leicesters, and Merinoes; the Leicesters are considered the best. There have been only two dairies established in the township; one has proved highly remunerative, the other less so, in consequence of the grazing land not being of the best quality.

There has been no thorough drainage of land commenced, although all are convinced of its value.

Root crops have not been cultivated extensively.

Reaping and mowing machines are being introduced into this locality.

There is one nursery, containing say fifty thousand trees, chiefly apple.

STORRINGTON.—Thirty-four members; report imperfect.

WOLFE ISLAND.—The report from this society is also imperfect. The societies in this county appear generally to have held no exhibitions this year, in consequence of the Provincial Show being within the county.

GLENGARY.

COUNTY SOCIETY.—One hundred and ten members; subscription, $112; balance from previous year, $151.67; deposited by township branches, $168.50; Government grant, $479.98; sundries, $5.75; total received, $917.90. Paid township branches, $428.48; premiums, $298.01; incidental expenses, $91.47; balance in Treasurer's hands, $99.94.

TOWNSHIP BRANCHES.

CHARLOTTENBURGH AND LANCASTER.—Amount of subscriptions, $82; balance from

previous year, $110.65; share of public grant, $130; total receipts, $322.65. Paid for stock animals for society, $276; expenses, $24; balance in hand, $22.65.

LOCHIEL AND KENYON.—Amount of subscriptions, $85.50; balance from previous year, $5.65; grant, $129.99; total, $221.14. Paid in premiums, $184.28; expenses and sundries, $30.99; balance in Treasurer's hands, $5.87.

SOUTH GRENVILLE.

COUNTY SOCIETY.—Three hundred and four members; amount of subscriptions, $415.86; Government grant, $479.98; received from sale of lumber and stock, $190.70. Paid building and other expenses, $430.15; prizes, $484; office expenses, $100.

Extract from Report:

The annual fair and society's show was again held on the grounds of H. D. Jessup, Esq., and although not quite so largely attended as last year, may be considered satisfactory, considering the excessively inclement nature of the weather, which caused a large diminution in the receipts. It is a subject of regret to know that the agricultural products raised, and put up for sale in this locality, do not generally (there are however numerous eminent exceptions,) bear the high reputation enjoyed by other neighboring districts, owing not so much to interiority in quality, as to the carelessness in packing and preparing for market. This is a great mistake, and involves a heavy loss to the seller, because by reason of the advantage of the position of this locality, (being so near the American frontier,) the highest prices can always be obtained for best grades. Formerly so much care was not required, but now it is expected, and is all important to the seller. It may not be generally known that winter barley has been tried and successfully grown in the Ottawa and some western districts in Upper Canada. It is sown early in September, and is ripe early in July. In the Niagara district last year, 60 bushels on fallow and 40 on corn land was produced per acre.

Owing to the large demand for several years past in this locality for cord wood, for the purposes of navigation, &c., much of our farmers' time has been consumed in cutting down to meet this want, instead of raising up, which no doubt is his most legitimate occupation, and there can be no doubt that the demand for the above mentioned article has lately much diminished without any prospect of its immediate recovery. The time that has therefore been devoted to that purpose should now be directed to other equally sure sources of wealth, such as drawing the rich and fertile muck of swamps, manure from stables and barnyards, and towns, to the higher and more exhausted portions of the farm, removing stones, clearing off logs, &c., preparing for underdraining, selecting and carefully cleaning seed, getting out and drawing fence timber, repairing stables and premises, implements, &c., so that when spring arrives, all will be ready prepared for a large cultivation.

Miscellaneous.

LIGHT LET INTO THE STOMACH.—Professor Busch, superintendent of the hospital of Bonn, in Germany, communicates to the medical journals the history of a case almost as remarkable as that of the famous St. Martin, who has been living so many years with a hole in his stomach, allowing people to look in and see the process of digestion going on inside. A woman was brought to the hospital of Bonn, who had been gored sometime previously by a cow, wounding her in the abdomen. The injury resulted in a fistulous opening through the walls of the abdomen into the upper third of the small intestines The result was, that as soon as the woman commenced to eat, the food would begin to run out of the opening; and though her appetite was ravenous, she had become very much emaciated when she was admitted to the hospital. Dr. Busch tried the plan of injecting soups through the opening directly into the intestines, even crowding in little pieces of meat and bread with his finger. Under this odd mode of feeding the patient thrived and gained flesh rapidly. Of course, Professor Busch seized this rare opportunity to make a series of physiological investigations, which have proved to be very interesting. The fact of greatest practical value observed was, that the gastric and other juices by which digestion is effected, are secreted in much greater abundance when several kinds of food are taken into the stomach, than when a meal is made of a single article. This confirms the latest conclusions of other physiologists, and is useful knowledge as a guide to action. Dyspeptics can commit no greater blunder than to confine themselves to a very few articles of diet. It is best for us all to eat a variety of food at each meal.

INVENTORS.—The London *American* says:—"While many an inventor has lived and died in a garret, a fortunate few end their days amid the bounteous fruits of their labor. As there is

no class in the community to which the world is so much indebted, so there is no class more generous with their wealth. In America, perhaps, more than in Europe, the inventors are likely to reap a fortune, as the rapid development of the sources of wealth and the scarcity and comparatively high price of manual labor, necessitate the almost immediate introduction of any really useful labor-saving machine. This is especially true of agricultural implements, and often large fortunes are realised on simple articles of use. A gentleman by the name of Peeler, who is said to have realised $400,000 (£80,000) from the sale of a patent plow, has recently proved the profitableness of his invention and the goodness of his heart by giving $200,000, or £40,000, of this sum to the Methodist Church of the United States."

Memory of the Elephant.—A female elephant, belonging to a gentleman at Calcutta, who was ordered from the upper country to Chittagong, in the route thither broke loose from her keeper, and, making her way to the woods, was lost. The keeper made every excuse to vindicate himself, which the master of the animal would not listen to, but branded the man with carelessness, or something worse; for it was instantly supposed he had sold the elephant. He was tried for it, and condemned to work on the roads for life, and his wife and his children were sold for slaves. About twelve years afterwards, this man, who was known to be well acquainted with breaking elephants, was sent into the country with a party, to assist in catching wild ones They came upon a herd, and this man fancied he saw amongst the group his long-lost elephant, for which he had been condemned. He resolved to approach it; nor could the strongest remonstrances of the party dissuade him from the attempt. Having reached the animal, he spoke to her, when she immediately recognised his voice; she waved her trunk in the air as a token of salutation, and spontaneously knelt down, and allowed him to mount her neck. She afterwards assisted in taking other elephants, and decoyed three young ones, to which she had given birth in her absence. The keeper returned, and the singular circumstances attending the discovery being told, he regained his character; and, as a recompense for his unmerited sufferings, had a pension settled on him for life. This elephant was afterwards in possession of Warren Hastings, when Governor General of Hindostan. —*Cassell's Popular Natural History.*

The Cutting Ants of Texas.—In the "Proceedings of the Academy of Natural Sciences at Philadelphia," Mr. Buckley describes these most destructive insects:—"They burrow extensively under ground, and form chambers generally from ten to twelve feet, sometimes eighteen feet deep, the upper cells being seldom nearer to the surface than eighteen inches. These have avenues four or five inches in diameter, by which these ants convey their stores of barley, &c. Sometimes these ants tunnel beneath a stream to get into a garden. When their dens become foul, or are injured by heavy rains, millions emigrate *en masse*. Mr. Buckley saw multitudes on the banks of the Colorado river, going up hill, bearing fragments of leaves and berries, marching like an army with banners. Great is the damage they do by destroying trees and vegetables. They will strip a fruit-tree of leaves in a night. Attempts to exterminate them by fumigating their dens have failed: the only effectual method is to dig, and kill the females and young. This is so expensive that it is only resorted to near a garden or dwelling; and as these ants are scattered throughout Western or Cantral Texas, they will probably never be exterminated by man.—*Annals of Natural History.*

The Sponge.—The substance so well known by the name of sponge, is an animal product, which is found attached to the rocks under water in the Mediterranean and other seas. Sponge is a light, soft, and highly elastic material, very easily compressed, and rapidly resuming its original shape when the pressure is removed. It is exceedingly porous, containing an immense number of small tubes, which communicate with some larger apertures that are found in it. The substance of the sponge consists of living elastics fibers, and these are are so placed as to form the tubes and pores described.

When the sponge is in the sea, alive, the inside of the pores are covered with a substance, like the white of an egg. This appears to be the flesh of the animal, and currents of water may be seen running into the sponge, through the small pores, and out of it through the large ones; and it is supposed that while the water is passing through the sponge, the nourishment requisite for the support of the animal is extracted. When the sponge is removed from the water, this soft flesh drains away, leaving nothing but an elastic fibrous substance, with which we are acquainted.

The use of the sponge, as a material for washing with, depends chiefly on its being so highly porous and elastic. When placed in water its pores become filled with the liquid. If in this state it is compressed, the water is readily forced out over anything desired to clean, and as soon as the pressure is taken away, the sponge resumes its former size, and its pores are again open to suck up a fresh supply of fluid, if required.

The sponge we use comes chiefly from the Mediterranean Sea, where it is procured by diving, and also by dredging, or dragging the bottom of the ocean. The best sponge,—which is white and fine—comes from Turkey; the inferior

and coarse kinds from the coast of Barbary. Ten or eleven kinds of sponge are found on the coast of England—none of them, however, are fit for use.

Colds.—If a man begins to cough, as the result of a common cold, it is the effort of nature herself attempting the cure, and she will effect it in her own time, and more effectually than any man can do, if she is let alone, and her instincts cherished. What are these instincts? She abhors food and craves warmth. Hence the moment a man is satisfied that he has taken cold, let him do three things. First, eat not an atom; second, go to bed and cover up warm in a room; third, drink as much cold water as he wants, or as much hot herb tea as he can, and in three cases out of four, he will be entirely well in thirty-six hours.—*Hall's Journal of Health*

Civilization under Water.—I have had an ample opportunity to watch the pametis, in the breeding season, every spring, for the last eight years. At that time, it approaches in pairs the shores of the ponds in which it lives, and selects shallows, gravelly places, overgrown with potamogeton, water-lillies and other aquatic plants, in which it begins by clearing a space of about a foot in diameter, rooting out the plants, removing, with violent jerks of its tail, the larger pebbles, and leaving a clean spot of fine sand, in which it deposits its eggs, surrounded and overshadowed by a grove of verdure. In this enclosure, one of the parents remains hovering over its brood, and keeping at a distance all intruders.

The office of watching over the progeny does not devolve exclusively upon either of the sexes, but the males and females watch alternately. The fierceness with which they dart at their enemies, and the anxiety with which they look out for every approaching danger, show that they are endowed with stronger instincts than have been known heretofore in any of their class. Their foresight goes so far as to avoid the bait attached to any hook, however near it may be brought to them, and however lively and tempting it may be. However near to one another, the pair of one nest do not interfere with those of another; but, like good neighbors, they live peaceably together, passing over each other's domains, when going out for food, without making any disturbance. But whenever an unmated single fish makes it appearance among the nests, he is chased away, like an intruding libertine and vagabond. The development of the egg is very rapid. In less than a week, the young are hatched, and the parents soon cease to take any farther care of them.—*Agassiz.*

Preservation of Forests.

From the manner in which the Germans preserve and improve their forests, our countymen might take a valuable lesson. At Hohenheim this forms one of the most important departments of study. The pupils are instructed in the best method of preserving, propagating and improving their forest trees, while at the same time a proper estimation of the pecuniary and moral value of those noble productions of nature is instilled into their minds, which must eventually become the common sentiment.

Our people must give attention to this subject, sooner or later; and every day's neglect of this practical science will entail evils upon us for which years of labor will hardly make amends. We do not, as a people, appreciate the value of our forests. Negligently, carelessly and wantonly we are destroying them on every side, not considering that in them lies a mine of untold wealth; for the time comes with every people when they can turn their own natural productions to the most advantageous use for themselves; and this law applies as firmly to trees as to the coals and various mineral ores. yet what destruction of the best and most valuable timber have we witnssed during the past forty years! A statistical statement of the pecuniary loss would astonish the reader, to say nothing of the loss of health and domestic comfort.

The connection of family health, enjoyment and comfort, with a grove of primeval forest trees about the homestead, never entered the practical heads of our fathers; and their sons, true to the example before them pursue the same suicidal course. Down come the lofty oaks and the beautiful maple, leaving the homestead to parch and the spring to dry up in the scorching rays of the sun.

If there are exceptions here and there, you will find the value of the farm increased a thousand fold, simply because the trees have been let alone.—*Exchange.*

The Marvels of a Seed.

Have you ever considered how wonderful a thing the seed of a plant is? It is the mystery of mysteries. God said, Let there be "plants yielding seed;" and it is further added, each one, "after his kind."

The great naturalist, Cuvier, thought that the germs of all past, present, and future generations of seeds were contained one within the other, as if packed within a succession of boxes. Other learned men have explained this mystery in a different way. But what signify all their explanations? Let them explain it as they will, the wonder remains the same, and we must still look upon the reproduction of the seed as a continual mystery.

Is there upon earth a machine, is there a palace, is there even a city, which contains so much that is wonderful as is enclosed in a single little seed—one grain of corn, one little

brown apple seed, one small seed of a tree, picked up, perhaps, by a sparrow for her little ones, the smallest seed of a poppy or a blue bell, or even one of the seeds that are so small that they float about in the air invisible to our eyes: Ah! there is a world of marvels and brilliant beauties hidden in each of the tiny seeds. Consider their immense number, the perfect separation of the different kinds, their power of life and resurrection, and their wonderful fruitfulness!

Consider first their number. About a hundred and fifty years ago, the celebrated Linnæus who has been called "the father of botany," reckoned about 8,000 different kinds of plants: and he then thought that the whole number existing could not much exceed 10,000. But a hundred years after him, M. de Candolle, of Geneva, described 40,000 kinds of plants; and at a later period he counted 60,000, then 80,000 and he supposed it possible that the number might even amount to 100,000.

Well, let me ask you, have these 100,000 kinds of plants ever failed to bear the right seed? Have they ever deceived us? Has a seed of wheat ever yielded barley, or a seed of a poppy grown up into a sun flower? Has a sycamore tree ever sprung from an acorn, or a beech tree from a chesnut? A little bird may carry away the small seed of a sycamore in its beak to feed its nestlings, and on the way may drop it on the ground. The tiny seed may spring up and grow where it fell, unnoticed, and sixty years after it may become a magnificent tree, under which the flocks of the valleys and their shepherds may rest in the shade.

Consider next the wonderful power of life and resurrection bestowed on the seeds of plants, so that they may be preserved from year to year, and even from century to century.

Let a child put a few seeds in a drawer and shut them up, and sixty years afterwards, when his hair is white and his step tottering, let him take one of these seeds and sow it on the ground, and soon after he will see it spring up into new life, and become a young, fresh and beautiful plant.

Mr. Jouannet relates that in the year 1835, several old Celtic tombs were discovered near Bergorac. Under the head of each of the dead bodies there was found a small square stone or brick, with a hole in it, containing a few seeds; which had been placed there beside the dead by the heathen friends who had buried them, perhaps 1,500 or 1,700 years before. These seeds were carefully sown by those who found them, and what do you think was seen to spring up from this dust of the dead!—beautiful sunflowers, blue corn flowers, and clover, bearing blossoms as bright and sweet as those which are woven into wreaths by the merry children now playing in our fields.

Some years ago a vase, hermetically sealed, was found in a mummy pit in Egypt, by the English traveller, Wilkinson, who sent it to the British Museum. The librarian there having unfortunately broken it, discovered in it a few grains of wheat and one or two peas, old, wrinkled, and as hard as stone. The peas were planted caretully under glass on the 4th of June, 1844, and at the end of thirty days these old seeds were seen to spring up into new life.—They had been buried probably about 3,000 years ago, perhaps in the time of Moses, and had slept all that long time, apparently dead, yet still living in the dust of the tomb.

Is not the springing of the seed an emblem of the resurrection of the dead? Accordingly it is mentioned by the Apostle Paul, in 1 Cor. xv., where from the springing of the seed, he explains the doctrine of the resurrection unto life. —*Gaussen*

The Human Body.—When we have gained some slight knowledge of the wondrous mechanism we name the body, how multitudinous its combined actions, how easily the disturbance of one will affect the healthy action of the rest, and how recklessly we disregard the plainest rules of health, wonder at a few men having succumbed in the course of an intense intellectual life ceases at once, and a new wonder emerges—wonder that any man can live this life, and retain his faculties in healthy activity. The very predominance of the nervous system implies a predominant activity, and this is liable to be stimulated to excess by two potent tempters: ambition, eager to jostle its way through energetic crowds; and fascination, which lies in intellectual labor, the brooding *storge* of creation, the passionate persistence of research. These tempters hurry men into excess. Men who live much by the brain have seldom the courage to be prudent, seldom the wisdom to be patient. In vain the significant words of warning become louder and louder; in vain the head feels hot, the ears are full of noises, the heart fluttering and thumping, the nights sleepless, the digestion miserably imperfect, the temper irritable: these are nature's warnings to desist, but they are disregarded; the object of ambition lures the victim on, the seduction of artistic creation, or of a truth seen dancing like a will-o'-wisp, incessantly solicits him; he will not pause—at length he cannot pause, the excitement has become a fever, the flame that warms destroys him: madness arrives. Sad this is, and would be infinitely sad if there were no help for it, if the very glory and splendor of the intellect were necessarily allied to its infirmity and ruin. But it is not so. Men cannot transgress nature's laws without incurring nature's penalties.

English Horses.—A writer in the *London Review* complains that the noble breed of useful English horses is becoming ruined. He says:

Our country, once famed for the best breed of

saddle-horses in the world, is becoming overrun with a lot of worthless, weedy, refuse racing stock, which by many inexperienced farmers and breeders, are gradually being crossed with, and thus deteriorating the breed of our short-legged, deep-bodied, wide-hipped, strong loined saddle-horses, the lineage of which, in a few instances, we can still trace, by their compact forms, to the breed of race horses encouraged by our forefathers, who bred horses for *useful* purposes, to carry *men* long distances, and not the spindle-shanked velocipedes bred by our turfmen of the present day, that break down after running a few furlongs with a baby on their backs.

The Excitement of Intoxication.—The love of narcotics and intoxicating compounds is so universal, it may almost count as an instinct. Every nation has it in a greater or less degree—some in the shape of opium, some in smoke, some in drink, some in snuff; but, from the equator to the snow-line, it exists—a trifle changed in dress, according to the climate, but always the same need, always the same desire Kings have decreed punishment on the secular side; priests have anathematized on the spiritual; law makers have sought to pluck out the habit, root and branch, from their people; but all to no good—man still goes on smoking, snuffing and chewing; putting "an enemy into his mouth to steal away his brains," and finds immense satisfaction in a practice that makes him both an invalid and a madman, and never quits him till it has laid him fairly in the grave.—*Chambers' Journal.*

The Power of the Heart.—Let any one while sitting down, place the left leg over the knee of the right one, and permit it to hang freely, abandoning all muscular control over it. Speedily it may be observed to sway forward and back through a limited space at regular intervals. Counting the number of these motions for any given time, they will be found to agree exactly with the beatings of the pulse. Every one knows that, at a fire, when the water from the engine is forced through bent hose, the tendency is to straighten the hose; and if the bend be a sharp one, considerable force is necessary to overcome the tendency. Just so it is in the case of the human body. The arteries are but a system of hose through which the blood is forced by the heart. When the leg is bent, all the arteries within it are bent too, and every time the heart contracts, the blood rushing through the arteries tends to straighten them; and it is the effort which produces the motion of the leg alluded to. Without such ocular demonstration, it is difficult to conceive the power exerted by that exquisite mechanism, the normal pulsations of which are never perceived by him whose very life they are.—*Jos. W. Sprague.*

Horses and Mules.—A correspondent of the *N. Y. Spirit*, writing from Virginia, says: "If my experience is worth anything to Old Whip's theory in Horses *vs.* Mules, you can tell him that by actual experiment a pair of horses will carry a plough, drill, harrow or wagon, over more ground, and do work better, in eight hours, than mules will in twelve. In seeding wheat, *I put in more* with a pair of carriage horses to a drill, running them from 8 till 12 and from 2 to 6, than I could do with mules from sun to sun."

Washington as an Agriculturist.—Perhaps a short account of Washington as an agriculturist, may be new and interesting to some of your readers. His views upon the raising of tobacco might well be pondered by our Connecticut valley producers of the weed. I copy from "Washington's Political Legacies," to which is annexed an appendix, containing an account of his illness, death, &c. &c. Boston, 1800:

"Colonel Washington was one of the greatest landholders in North America; his estate at Mount Vernon was computed in 1787, to consist of nine thousand acres, under his own management and cultivation: he had, likewise, various other large tracts of land in other parts of the State; his annual receipt from his estates, amounting in 1776, to four thousand pounds sterling, and it was then believed would have sold for upwards of one hundred and sixty thousand pounds sterling, which is equal to more than $666,000. What his revenue was recently, we do not know, but there can be little presumption in supposing it was much increased under his prudential guidance, and practical economy.

"He allotted a part of the Saturday in each week to receive the reports of his overseers, which were registered progressively, to enable him to compare the labor with the produce of each particular part, and it is affirmed that this weekly retrospect was duly considered by this great man during the stormy movements of the numerous household, which amounted to nearly revolutionary war, and his presidency of the United States. He has raised in one year, seven thousand bushels of wheat, and ten thousand bushels of Indian corn, on his Mount Vernon estates; in a succeeding year he raised two hundred lambs, sowed twenty-seven bushels of flax seed, and planted seven hundred bushels of potatoes: at the same time his domestics manufactured linen and woolen cloth enough for his a thousand persons. With him, regularity and industry were the order of each day, and the consequent reflection made them all happy. Though agriculture was pursued by him with such undeviating attention, he used it rather as the means of his pleasure, than the end of his wishes, which concentrated in the labor to improve the well being of his fellow-citizens; and to effect this, he desisted from planting tobacco, to employ himself in the introduction and foster-

ing such articles of vegetation as might ultimately tend to a national advantage."—*New England Farmer.*

Look to the Chests of your Animals.—A late writer says that a wide, deep chest in all animals is an indication of robust constitution, and is, no doubt, the point of shape to which breeders should look when selecting either males or females. It is not enough that a bull or cow should show a wide, full breast in front, but the width should extend back along the brisket, and show itself under and between the elbows Fullness through the region of the heart is indispensable in either sex.

The Language of Animals.

"That animals have each a languge of their own to one another," says James Hogg, (the Scottish "Ettrick Shepherd,") "there can be no doubt. I know a good deal of their lan- myself. I know by the voice of the raven when he has discovered one of my flock dead; I know also his prelude to the storm and to fine weather. The moor-fowls call one another from hill to hill. I learned to imitate their language so closely that I could have brought scores of them within the range of my shot of a morning. The black-cock has a call, too, which brings all his motely mates around him, but the female has no call. They are a set of subordinate beings, like the wives of nabobs. They dare not even incubate upon the same hill with their haughty lords. But the partridge and every mountain bird have a language to each other; and though rather circumscribed, it is perfectly understood, and as Wordsworth says 'not unknown to me.' The stupid and silly barn-door hen, when the falcon appears, can, by one single alarm note, make all her chickens hide in a moment. Every hen tells you when she has laid her egg; and lest it should not be well enough heard or understood, the cock lends the whole power of his lungs in divulging the important secret. The black-faced ewe, on the approach of a dog or a fox, utters a whistle through her nostrils which alarms all her comrades, and immediately puts them upon the look out. Not one of them will take another bite till they discover whence the danger is approaching. If the dog be with a man, sundry of them utter a bleat, which I well know, but cannot describe, and begin feeding again. If the dog is by himself, they are more afraid of him than of any other animal, and then you will again hear the whistle repeated through the whole glen.

But the acuteness of the sheep's ear surpasses all things in nature that I know of. A ewe will distinguish her own lamb's bleat among a hundred lambs, all bleating at the same time, and making a noise. Besides the distinguishment of voice is perfectly reciprocal between the ewe and the lamb, who, amid the deafening sound, run to meet one another. There are few things which have ever amused me more than a sheep-shearing, and the sport continues the whole day. We put the flock into the fold, set all the lambs on the hill, and then send out the ewes to them as they are shorn. The moment that a lamb hears its dam's voice, it rushes from the crowd to meet her, but instead of finding the rough well clad mamma which it left an hour or a few hours ago, it meets a poor naked shivering—a most deplorable looking creature. It wheels about, and uttering a loud, tremulous bleat of perfect despair, flies from the frightful vision. The mother's voice arrests its flight—it returns flies and returns again generally ten or a dozen times before the recognition is perfect."

False Education.

Shame upon historians and schoolmasters for exciting the worst passions of youth by the display of false glories! If your religion hath any truth or influence, her professors will extinguish the promotory lights, which only allure to breakers They will be assiduous in teaching the young and ardent that great abilities do not constitute great men, without the right and unremitting application of them; and that, in the sight of humanity and wisdom, it is better to erect one cottage than demolish a hundred cities. Down to the present day we have been taught little else but falsehood. We have been told to do this thing and that; we have been told we shall be punished unless we do; but at the same time we are shown by the finger that prosperity and glory, and the esteem of all about us, rest upon other and very different foundations. Now, do the ears or the eyes seduce the most easily, and lead the most directly to the heart? But both ears and eyes are won over, and alike are persuaded to corrupt us.—*Walter Savage Landor.*

Names of Teas.—Hyson means before the rain, or flourishing spring—that is, early in the spring. Hence it is often called Young Hyson. Hyson Skin is composed of the refuse of the other kinds, the native terms for which means tea skins. Refuse of a still coarser description, containing many stems, is called tea bones. Bohea is the name of the hill where it is collected. Pekoe, or Pecco, means white hairs—the down on the tender leaves. Powchong—folded plant. Souchong—small plant. Twankay is the name of a small stream in the province where it is brought. Congo is from a term signifying labour, from the care required in its preparation.

Horse Census.—The following curious account is given in Appleton's Cyclopedia, of the number of horses in the various parts of the world:—"The general estimate has been eight to ten horses in Europe for every hundred inhabitants. Denmark has forty five horses to every hundred inhabitants, which is more than any other European country. Great Britain and Ireland have 2,500,000 horses; France 3,000,000; Austrian Empire, exclusive of Italy, 2,600,000; Russia 3,500,000. The United States have 5,000,000.

The amount of grain in store at Oswego and Buffalo at the present time, according to a carefully prepared statement in the Oswego *Commercial Times*, is 3,343,000 bushels, embracing 2,625,000 bushels of wheat, 441,000 bushels of corn, 42.000 bushels of oats, 147,000 bushels of barley, 84,000 bushels of rye, and 3,000 bushels of peas. This does not include the amount afloat at Buffalo. Total receipts of grain at Oswego and Buffalo for the season, reducing flour to wheat, aggregate 55,000,000 bushels nearly.

The Value of a Dead Horse.—The value of a dead horse is from 20s. to 60s., the average value 40s.; the weight in pounds from 672 to 1,138, the average weight in pounds 950. Recollect that every application to art or science of this dead horse renders him of greater value; and it is for us, engaged in various ways in the arts of life, to see whether we cannot apply things that have hitherto been wasted. Five hundred horses die every week in London. The hair is worth from 8d. to 1s. per lb., and it is used for making haircloth, for stuffing mattresses, and making plumes, and bags for crushing seed in oil mills. Then the hide, weighing 30 lbs, is worth 8s., which is, perhaps, not a great deal of money; but when you have from 300 to 500 a week dying within a radius of five miles from Charing-cross, it comes to some money. Then the skin is used for a variety of purposes; tendons, you know, are made into gelatine, and glue, and jellies. I told you that you must not be particular about these jellies; when the poor old horse has drawn your carriage, served you in omnibus and cab, and died at last, even then you have not done with him, for his tendons then serve you for your delicious jellies. Then, again, it is not an uncommon thing for man to eat horse flesh. We do not eat it here knowingly, but they eat it on the continent of Europe. Then there is the blood, which is carried to the prussiate of potash manufacturers. Then there are the internal tubes, which are used for the coverings of sausages; and, as I said of the jellies, we need not ask any questions about these coverings as long as they are sweet. The heart and tongue are evidently great "mysteries," for no one knows what is done with them. There is almost as much mystery about them as about the manufacture of the cloth of your coat. The heart, however, can be chopped up and mixed with sausage-meat, and the tongues may be sold for ox-tongues. On a recent occasion, when I stated this fact, a newspaper which reported my lecture, added that it was all a mistake, and that the tongues were never sold for so inferior an article as an ox-tongue; they were always sold as reindeer tongues. Now, passing over the fat, which is worth 3s. 4d., I need not tell you that horses' bones are as good as any other bones, and can be employed for the various purposes to which other bones are applied. The bones of a horse weigh about 160lbs., and are worth 4s. 6d. per cwt. Then there are the hoofs; 6lbs. of these, at 8s. 10d. per cwt., which can be used for making buttons, prussiates, and snuff-boxes. I do not think that it is correct to say that they are used in making glue. I think horses' hoofs are composed of the same material as hair. They are sold, it is true, to the gluemaker, but he sells them to the prussiate-manufacturer. Even the poor old shoes are worth from 4s. to 10s. per cwt.; and then with regard to all these substances employed, there is nothing which cannot be used again and again.—*Dr. Lankester's Lectures.*

Plants which form National Badges.—England, the Rose, Rosa sp.—Scotland, the Thistle, Cnicus lanceolatus—Ireland, the Shamrock, Oxalis acetosella, according to Mr. Bicheno; but commonly considered to be the White Clover, Trifolium repens—France, the Fleur-de-lis, Iris sp.

Rats.—A correspondent of the *Gardener's Monthly* says: "I tried the effect of introducing into their numerous holes, runs, or hiding-places, small portions of chloride of lime, or bleaching powder, wrapped in calico and stuffed into the entrance holes, and thrown loose by spoonfuls into the drain from the house. This drove the rats away for a twelvemonth, when they returned to it. They were treated in the same manner, with like effect. The cure was most complete. I presume it was the chlorine gas, which did not agree with their olfactories."

Editorial Notices &c.

Blackwood's Magazine for January, 1861.—The first number of the new volume contains the usual quantity of first rate articles on some of the leading topics of the day. Price $3 a year; or with any of the four Reviews, $5. Blackwood and the four Reviews, for $10 per annum. This is the most seasonable time for commencing subscriptions. New York, Scott & Co.; Toronto, H. Rowsell, King Street, and booksellers in general throughout the Province.

REPORT OF THE MASSACHUSETTS' HORTICULTURAL SOCIETY FOR 1860.

We have been favoured with advanced sheets of the Annual Report of this old and influential Society from Mr. Wright, Corresponding Secretary. It contains in the various reports of the sub-committees much interesting and useful matter on many points of practice pertaining to the extensive and beautiful art of Horticulture; and from which we shall doubtless glean something for the information of our readers.

The Agriculturist for 1861.

The *Agriculturist* is published semi-monthly, each number consisting of 32 pages, and forming a volume of 768 pages.

The *Agriculturist* is exclusively devoted to Agriculture, Horticulture, and similar subjects. It is the cheapest paper of the kind in North America, and specially adapted to the circumstances of the soil and climate of Canada.

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As a further reduction in price on the largest orders, the following money premiums will be paid on copies ordered and paid for prior to or on 1st April next, viz:—

To the officer of any Agricultural Society, member of a club, or other person who shall send in the largest list of subscribers, accompanied with the cash, on or before the 1st April next, a money prize will be paid of.. $20
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Weeds.

Nothing, perhaps, as unmistakably denotes bad, or slovenly farming as the prevalence of weeds. They constitute a sign so obvious, and the disadvantages produced thereby are so palpable to the most ordinary perception, that no one who thinks and observes at all on the subject can well be led astray in his judgment. The presence of weeds in cultivated land is without doubt an unmitigated evil, and it is impossible to conceive of even one step being permanently taken towards an improved system of agriculture that does not include clean cultivation.

But it may be asked what is a weed? The general answer would be, any plant that is troublesome, or injurious to cultivated crops. Professor Buckman's definition is, "Every plant different from the crop, and growing with the crop to its hindrance." This is a definition of a very wide embracing character. According to it, a potato-plant growing amongst a crop of wheat, or a turnip amongst a crop of barley, or a plant of any of the cereals amongst a crop of a different species, and not intended to be there, is a weed. Farmers in general, however, do not accept the term in so wide a signification; and by weeds they understand all such plants as are wild and worth less, indigenous or imported and injurious to cultivated crops.

The weeds of the farm may be conveniently divided into two classes; although in some instances both are united. Weeds that are propagated by seeds are usually annuals or biennials; and such as are propagated by roots, may be ranked among perennials.

Professor Buckman, of the Royal Agricultural College of Cirencester, England, has taken immense pains to obtain reliable results on the propagation and distribution of the more ordinary kinds of weeds. He discovered in a pint of clover seed 7,600 weed seeds; in a pint of cow-grass seed, 12,600; in broad clover, 39,440; and two pints of Dutch clover yielded severally 25,560, and 70,400 weed seeds. Supposing these samples to be sown, here were seeds enough to stock the land with weeds for many years, and which could not be extirpated but at a great expense of both time and labour. Our authority has counted 8000 seeds in a single plant of black mustard, and in a specimen of charlock 4000 seeds. The common stinking camomile produces 46,000, and the burdock 26,000 seeds; and the seeds of a single plant of the common dock produces 1,700 little docks.

From the above facts we learn with what a wonderful power of reproduction some weeds are endowed, and that the farmer often sows them, intermixed as they but too frequently are with his seed grain. It is well known in Britain that the ordinary rye-grass, which, like timothy, with us is sown with clover, is frequently saved in fields that are far from being clean, and on this account we have known farmers who would use no seed except of their own raising. Clover, timo-

thy, wheat and other grains are too commonly more or less mixed with the seed of weeds, from the foul state of the land on which they are raised, and the imperfect manner in which they are cleaned for market.

The wind is a powerful agent in propagating the growth of weeds, carrying sometimes to almost incredible distances winged seeds, such as those of the different kinds of thistle. It is a most fortunate thing that only a portion, and that perhaps a small one, of the downy seeds of the thistle, find sufficient covering on the earth's surface to vegetate and mature, or whole districts would be literally overrun with this destructive pest, which indeed is the case in some of the older settlements of this Province, particularly in the eastern section. The remedy, or what is better, the preventive of this monstrous evil is in the farmer's own hands. Such weeds should never be allowed to seed, whether they are growing in the highways or the fields. Of the most efficient means of extirpating thistles many valuable hints are to be found in recent numbers of this journal. But the principal thing the farmer has to do after he has once got his land clean and free from these unprofitable intruders, is *to keep it so.* This end can only be attained by a systematic course of thorough cultivation, the exercise of unscrupulous care in sowing only *pure* seeds, and vigilant attention to the pulling up of all descriptions of weeds wherever they may appear.

A prolific source of weeds in this country is often found in barn-yard manure. The seeds of weeds are too commonly brought into the barn with the crops, and in cleaning the grain go out into the yard with the straw, to be trodden into litter by the cattle. Unless the dung be put into mixers, and allowed to sufficiently ferment, the greater part of the weeds which it contains will be certain to grow wherever it is applied, particularly on arable land, and thus the evil becomes perpetually self-producing. If only a few neighboring farmers would resolve to combine for the extirpation of weeds, and vigilantly use the means for a few years, the evil might be kept down by ordinary caution, without involving any serious outlay, and the crops largely increased in quantity, and equally improved in quality.

One of the most common and troublesome weeds that propagate themselves by roots is the Couch grass, *Triticum repens;* and familiarly known by the name of quick grass, scuth grass, and *chien dent,* or dog's tooth and it is one of the most vivacious plants that grow. When this plant has got a strong hold of the soil, it can be extirpated only by a thorough summer fallow; the grubber is an excellent implement, bringing many roots to the surface, when they can be collected, placed into heaps, and burnt. In order to get thoroughly rid of couch grass, careful hand-picking will be sometimes found necessary, for the smallest root, not perfectly withered, when left in the ground, will be sure to vegetate, and in a congenial soil will rapidly extend itself in all directions.

Burning weeds ensures, of course, the destruction of their seeds; but this object may be attained by other means, and a larger amount of valuable manure secured. Collect the weeds and whatever vegetable matter can be obtained from the scouring of ditches, &c. into a corner of the field, mixing them alternately with layers of quick lime, and leaving the fibre to the process of decomposition, which the lime will tend to facilitate, as well as add to the amount and quality of the manure. Another method consists in placing the weeds in the centre or at the bottom of stable manure, at such a temperature as to preclude the possibility of vegetation. This requires the strictest attention, lest the heat induced by the fermentation of animal and vegetable matter should fail to destroy the principle of vegetation; in which case the whole quantity of manure would be only so many stimulants, aiding and abetting the couch grass in its future attempts to gain possession of the soil. By thus treating weeds they may be made to minister to the wants of our cultivated crops, the soil kept clean, and its produce increased to a degree, which to many would appear absolutely incredible.

Land Drainage.

We have written and published a good deal at various times on the subject of land drainage, and it is hardly necessary now to insist upon the importance of the improvement, especially in situations where the land is of such a character as

obviously to require it in order to give the productive capabilities of the soil fair scope. What we propose drawing attention to at present is the much greater cheapness with which drainage operations can now be effected, in comparison with a few years back, in consequence of the greatly reduced price at which tiles can be obtained. Mr. Wm. Gibbs, of Yorkville, is now prepared to furnish pipe tiles of the very best description, at his yard, Yorkville, at the following rates: 2 inch tiles, $5 per 1000, each tile 13 inches in length; 3 inch, $10 per 1000; 4 inch, $15; 5 inch, $30; 6 inch, $50. The 1½ inch tile will be furnished at $4½ per 1000. The length of all the sizes is the same, 13 inches. It is to be understood that these prices are strictly for cash on delivery. The rates are not more than half what the same description of tiles were sold at in this country two or three years ago, and we believe are quite as low as they are now sold at in England, where labor is so much cheaper, and drainage operations have been reduced by skill and experience to the lowest possible cost. Mr. Gibbs has from one to two hundred thousand tiles on hand, and is prepared to manufacture as many as may be required at the above rates, which we believe afford him only a very slight remuneration for the labor and material employed. There are other manufacturers in various parts of the country, who we presume will soon be able to furnish tiles at corresponding prices, but farmers who at present are unable to obtain them nearer home, if living near any of the railroads, can obtain them from Toronto at no very great cost of carriage. All strong clay lands, whether they appear naturally wet or dry, are benefitted by thorough drainage, as are all lands, heavy or light, containing springs, or subject to overflow of water, and in fact lands of almost every description, except the light and loamy soils upon naturally dry sandy or gravelly subsoils. The winter season, while the sleighing is good, is as favorable a time as could be selected for drawing home tiles to be laid in when field operations commence.

On Breeding.

Editors Canadian Agriculturist.

Having noticed in the *Agriculturist* of Dec. 1st, an article over the signature of W. A. C., on the principles of breeding, I consider the rules there laid down all very good, (except rule 11th), and I presume few, with this exception, would be found to differ from them. The objections, which I shall attempt to urge are against the spirit of the article, which in my humble opinion is calculated to make a wrong impression, though not so intended, and it is the more dangerous, containing as it does, so much that is really good, while at the same time it would discourage experiments, the very root of all improvement.

Your correspondent is a little inconsistent in his reasoning, when, in his introductory remarks he says, "We cannot believe we have penetrated beyond the mere threshhold of this art," and in the next sentence recommends for a guide "the most successful practice of modern times until further *discoveries* enable us to add to or modify such as already known." How I would like to ask are those discoveries to which he alludes to be made, if not by experiments in crossing breeds—the only means by which all improvement in the art of breeding has or ever can be effected—surely not by standing still. If W. A. C.'s principles had always been acted upon where would we be in the art of breeding, and where some of our most valuable breeds? And if so much has already been accomplished, what may we expect from the future? Who would be willing to say that new breeds may not be established in Canada equally, if not better adapted to the general wants of the country, than any which we now have? It is not to be expected that new breeds can be established without much care and pains, but enterprise and perseverence might accomplish much.

I have been highly interested in reading the remarks of W. C. Spooner on cross-breeding, containing much valuable information, and which I trust may be the means of inducing experiments that will result in improvements in the art of breeding.

Having commenced crossing the French Merino with the Leicester, I am encouraged to continue, and feel satisfied that they can be made profitable for more than slaughter, although Mr. Spooner alludes to the unsuccessful attempt in England to cross the Merinos and the Southdowns. But where carcass is evidently the chief object, nothing else could have been expected. In connection with this question I would beg to notice your remarks on S. King's letter in the *Agriculturist*, Dec. 16th, when giving the opinion of Manufacturers and not his own. You say, "Few who have studied the theory and art of breeding would concur with him," and dispose of his question by referring him to the letter of W. A. C., which I presume embodied the views of the Board in their decision not to allow a prize on the cross referred to. As I was the exhibiter, and consequently an interested party, allow me to ask one or two questions. As rule 11th is all that has any bearing on that point:—1st. What facts are there adduced to prove his statements? 2nd. If those are the views on which the Board decided "that no cross of distinct *breeds should*

be admitted for the purpose of perpetuation," what is the object sought in giving prizes for cross-breeds? The cross of French Merinos with the Leicester combine important qualities: a fair carcass, with ordinary disposition to take on flesh, and a quality of mutton not to be surpassed, a heavy fleece and superior quality of wool, which is eagerly sought for by our manufacturers will more than compensate for any lack of early maturity, which would be very slight, if any. I am really at a loss to conceive why a preference should be given to the coarse grades over the fine wool, when it is well known much of the long wool is too coarse for our domestic use, and large quantities are exported, while our manufacturers are obliged to import fine wool, with the charges for commission and transportation added to the cost of production.

JACOB RYMAL.

Barton, Feb. 6th, 1861.

In our remarks upon Mr. King's letter in the No. of Dec. 16th, we had more particularly reference to his question "Why give prizes to the grade female animal rather than the male?" rather than to the special subject of the cross of sheep alluded to. So far as our observation goes, most farmers who pay any attention to breeding at all, hold the opinion and act upon it, that in breeding to obtain good grade stock, it is better that the male animal should be as nearly as possible of pure blood. By this arrangement we can count with a greater degree of certainty upon the character of the stock that will be produced. Any farmer of intelligence would probably be found willing, if he could afford it, to obtain the services of a thorough bred Durham or other pure breed bull for his common cows of native breed, so called, and would expect to raise good grade animals from the cross; but no breeder would be willing to pay for a common road-side bull to put to his thoroughbred cows, with the view of obtaining the same result. The producing powers of the female are so slow in comparison to those of the male, that a good grade cow or heifer, representing probably fifty or a hundred similarly improved in a neighborhood, is recognised as a step in the right direction, and as the basis of further improvement, whereas to employ a grade bull to produce a score or fifty inferior animals in a season, instead of obtaining a pure-bred animal so as to ensure an advance upon the progress already made would be justly considered a retrograde step, except in a case where the cows are of an inferior character to the bull himself. But it is believed that the country has made sufficient progress, to render it unncessary for the Provincial Association to provide for cases like the latter, however proper it might be for societies in new or remote townships. The judges at the Provincial exhibitions have for many years almost unanimously repudiated the idea of giving premiums to grade bulls. And the same principle applies to other classes of animals. Our correspondent goes quite too far in supposing that the reference to W. A. C.'s letter indicates that the latter embodies the views of the Board in reference to the cross of sheep alluded to, shown at the late exhibition. The two things have no connexion. We do not know, in fact, to what decision of the Board Mr. King, in his letter, alludes. There was no decision at all, that we know of, or any discussion of the subject. The judges reported unfavorably of the cross-bred rams, as the published report will show, and commended the ewes and ewe lambs referred to. The special committee to whom the report was referred did not think proper to attach any money prize to the commendation of the Judges. We believe their view was that if such a direct cross resulted in a good animal, the mode of obtaining it was already encouraged by the Association in giving prizes to the pure breeds from which the cross was produced. Unless it could be shown that such a cross was really important, and that a breed could be established perpetuating its distinctive features with a considerable degree of uniformity and certainty, there would not appear to be any strong ground for expecting a high award from the Association. To give a premium for the mere first result, unless it could be reproduced, would not be productive of any public benefit. And in reply to our esteemed correspondent above, Mr. Rymal, we are inclined to think that the onus of proof as to whether such a cross-breed can be established so as to perpetuate itself as a distinct breed of uniform qualities, should rest with the experimenters rather than upon the Agricultural Association, and should be established to some extent to the public satisfaction, before the sanction of public reward should be expected. As to the question whether the Board may at future exhibitions

think it expedient to offer prizes for such a class of sheep as those referred to, we can, of course, say nothing. At the first Provincial Exhibition there were but three classes of sheep in the list, Leicesters, Southdowns and Merinos. The classes, like every other department of the exhibition, have been subdivided from time to time, and at the last exhibition prizes were offered for six separate classes of sheep. The subdivision of the fine-wooled classes has hardly kept pace with that of the long-wooled, as in fact the latter are more popular and more numerous in this country. We may state here that the long wooled class for other breeds than the Leicesters, Cotswolds, and Cheviots, was not created altogether for the crossbreeds, as our correspondent seems to suppose, but was meant to include any other pure longwooled breeds which might be exhibited, such as the Lincolns or others.—We think it highly probable that a further classification of the fine and medium wools will take place at another exhibition, although we are not so well satisfied that will be in the precise direction desired by our correspondent.]

Root Culture.

EDITOR OF THE AGRICULTURIST.—Seeing an article on Root crops in the January number of the Agriculturist, and being urged by several of my neighbors to publish a statement of my crop of Swede Turnips of last season, in accordance with your request to subscribers to furnish any facts in their possession of general interest relating to farming, I send you the following: Having for some time been increasing the quantity of land under turnips, I sowed last season six and a half acres of purple top Swedes; land, sandy loam, one main drain through the field four and a half feet deep, sowed first week in June, land drilled and manured at time of sowing. Stored of said quantity 7000 bushels, or about thirty two tons per acre, at 60 lbs per bushel. This statement to many may seem large, but it is under, not over the quantity. Four turnips brought out of the field (not out of the garden as is too common) to a neighboring exhibition, tops included, weighed together ninety eight and three fourths pounds. Not wishing to trespass on your columns from a point *so far North*, in giving details of the crops in the various stages of growth, process of cultivation, storing, items of expense pro and con, &c., as it would make this article longer than intended,

I remain, &c., R. CARSS.

Township of Fitzroy, Co. Carlton, Feb. 1861.

Observations on the Physical Geology of the Western Districts of Canada.

BY CHARLES ROBB, C. E., HAMILTON, C. W.

From The Journal of the Canadian Institute.

(Continued from page 72.)

General Inferences.—In order to account for all the phenomena I have thus briefly sketched, we are irresistibly impelled to the conclusion that subsequently to this region having acquired its present geological configuration, so far as relates to the outline of the older rocks, the land was submerged under the sea to a moderate depth, and that large ice-islands were driven by currents from the north, charged with mud and boulders, which, as they grounded on the bottom, pushed along all loose materials of sand and pebbles, broke off all angular and projecting points of rock, and when fragments of hard stone were frozen into their lower surfaces, scooped out furrows and grooves in the subjacent rocks. When the icebergs melted, the soft and loose insoluble materials which they conveyed subsided into the bottom, filling up valleys in the ancient rocks, covering them under a mass of clay and sand where currents were powerful enough to reduce the deposits to a general level, and forming mounds and hillocks of the same, in places where such currents did not prevail. That this was actually the case is proved by independent evidence, namely, the occurrence of marine shells of recent species, in the drift formation at various heights above the level of the sea in the region drained by the St. Lawrence.

Burlington Beach and Heights.—Of this nature and origin I have no doubt are the remarkable formation of the Burlington Beach and Heights, which seem to have been expressly designed by Providence, the first as a natural rampart and breakwater to protect our magnificent harbour, and the latter as a bridge to facilitate our communications by land. The immense masses of clay and drift which conceal the older formation between Dundas and Copetown render it impossible to say with certainty whether the latter preserve the same precipitous and continuous character round the head of Burlington Bay as along its north and south flanks; but there is the strongest reason to believe that they do. If then we conceive the rocks to have run continuously at the same elevation round the head of the valley, and at the same time imagine the sea to have covered them as explained before, we have here precisely the circumstances which would produce all the phenomena we now behold. A bay or basin would thus be formed entirely sheltered from the currents, and into which large quantities of the floating ice-islands would be driven by the winds; and thus would be produced that irregular, rolling, and deeply indented surface which we find prevailing from the eastern limits of Hamilton to Copetown. A succession of ridges of sand and gravel, no less than seven in number, in

some places more, and in others less distinctly marked, have been traced for great distances along the north shore of Lake Ontario, and as far east as the Montreal Mountain and the slopes of the White Mountains in Vermont; each preserving, as far as the Lake Ontario region is concerned, a uniform level at their bases, and all nearly parallel to each other and to the present beach of the Lake; but the lowest of these is one hundred and ten feet above the Lake at its base, and hence there is no reason to believe that the Heights form any portion of an ancient sea beach, as the others unquestionably are.* It is asserted by Lyell, on what seems to be incontrovertible grounds, that these beaches indicate the succession of levels of the sea as the country underwent a gradual and intermittent upward movement after the deposition of the boulder or drift formation, which was the last great change previous to the present era in the earth's history.

I may remark here that the deep notch or indentation formed by the Niagara river at the whirlpool on the Canadian side is bounded by a formation consisting exclusively of clay, cemented gravel and sand, with boulders both of granite and limestone origin, precisely similar to the formation at Burlington Heights; and that there is an obvious connection between this break in the older strata and the opening in the escarpment at St. David's, indicating that here a deep valley had originally existed, which, during the glacial period, was filled up with the materials peculiar to it.

The average depth of the clay over the area comprised between the foot of the slope of the mountain and the lake shore seems to be about twelve feet; but at the artesian well at St. Catherines it is forty feet thick. There is a remarkable break in the continuity of the red marl of the Silurian formation, commencing at the eastern limits of Hamilton and terminating at the west side of the old canal, the intervening space being filled to an unknown depth with laminated clay and sand. May not this be accounted for by the abrasion and grinding down of the older soft marl, produced by the agitation of the ice-bergs which I have supposed to be congregated and imprisoned in this locality? The clay has been pierced to a depth of from sixty to seventy feet at the passenger station of the Great Western Railway without passing through it.

Succession of Changes.—I shall now in conclusion give a brief general retrospect of the probable succession of events which have produced the geographical and physical configuration of the region under notice.

The first event to which we must recur is the successive deposition, at a time vastly and immeasurably remote, of the stratified rocks shewn in these sections. I have said that they belong to the oldest fossiliferous rocks, and probably they contain the records of the first of living forms. That they are of marine origin is indisputable from the sea weeds and deep sea shells which they contain, but no trace of fishes, of vertebrated animals or of terrestrial vegetation can be discovered in them, and it seems to have been for many ages a creation of molluscs, corals and crustaceans. These rocks remained nearly undisturbed and horizontal from the era of their formation to a comparatively modern period, during which interval the whole of the geological formations subsequent to the silurian system were deposited in different parts of the globe; and the vast succession of species of animals and plants whose histories we find written in these rocks have flourished and perished and been slowly entombed. During this interval also, and while the rocks in question still remained submerged in the ocean, they were denuded by currents, that is, portions were worn off and transported away, so as to form irregularities of surface, such as the basins of our great lakes, and such valleys as those of St. David's and the Welland Canal. They at length emerged slowly, and portions of their edges were removed by the action of the waves ard currents by which cliffs were formed at successive heights, such as those I have already adverted to around Flamboro' Heights. After this event another submergence under the sea occurred, and was followed by the glacial period, which it is to be remarked was of comparatively modern date. As soon as the table land between Lakes Erie and Ontario emerged, subsequently to the deposition of the drift and successive formation of the sea-beaches, the River Niagara came into existence, the basin of Lake Ontario still forming part of the sea; and then would commence the retrograde course of the river, continuing uninterruptedly as already described, till the present time.

* In the year 1852 in excavating through the Burlington Heights for the Great Western Railway a gigantic tusk of a Mammoth or *Elephas Primiginius* was exhumed, having been buried in the solid conglomerate at the depth of forty feet below the surface; and in the same cutting, the horn of a Wapiti or Canadian Stag was brought to light This latter species is not yet quite, although rapidly becoming, extinct on this continent; and the occurrence of its remains, associated with those of a species which has been extinct previous to the historic period, forms an interesting link between the past and present geological epochs.

BARN YARD MANURE.

The following is a condensation of the opinions of Dr. Cameron, of the *Irish Agricultural Review*, expressed at a late meeting of the Dublin Chemical Society:

1st. Farm-yard manure, when applied in sufficient quantity, is the best manure which can be employed alone, inasmuch as it contains all the elements required to nourish every kind of cultivated plant.

2d. A mixture of farm-yard manure and superphosphate of lime and guano, formed the best fertilizer that could be employed for every kind of crop, but more especially turnip and root crops generally. The farm-yard manure supplies all the elements of the food of plants, and by its decay in soil causes the latter to have a higher temperature than it would have if manured with guano or superphosphate alone. The artificial manure was a valuable auxiliary to the natural; it contributed one, and sometimes two, and three ingredients of the food of plants; but it was especially useful as a means of forcing the young plants out of the reach of the fly.

3d. Whilst Peruvian guano, in combination with superphosphate of lime, or farm-yard manure, was a most valuable adjunct, yet its continued use, *per se*, would be attended with injurious results, and for the following reason: Peruvian guano contained a very large proportion of ammoniacal matter in relation to the amount of phosphate of lime found in it. This ammoniacal matter acted as a solvent upon certain constituents of the soil, and rendered them available for the purpose of vegetable nutrition much sooner than would be the case if no guano were applied. Thus the guano not only contributed, itself to the food of plants, but enabled the plants to draw (so to speak) in advance upon the resources of the soil, which, if they did not exist in great abundance, would speedily be exhausted under the stimulating influence of the guano. *In limine*—the effects of the prolonged use of Peruvian guano may justly be compared to those produced by the adoption of the Tullian or Lois-Weedon system of tillage. In both cases the soil will sooner or later be exhausted of its store of fertilizing matters.

4th. Phosphate manure, such as superphosphate of lime, and even such as phospho-Peruvian guano, which contained a moderate proportion of nitrogenous matters, exerted but little solvent action upon the fertilizing constituents of the soil. The effects, therefore which such manures were observed to produce in the development of plants might be attributed solely to the nutriment afforded by these manures, and not to the intervention between the plant and the soil.

He recommended the employment of the natural and artificial manures in conjunction, and stated that the results of his own observation led him to recommend a mixture of two parts of superphosphate of lime and one of Peruvian guano, in preference to the use of guano alone; and this mixture might with advantage be employed or every variety of crop.

the Botany of the Red River Settlement and the old Red River Trail.

[Continued from page 68.]

Before going on I may here describe the usual routine of travel on such trips. It is always a rule to start early in the morning, and we generally rose at about five, and while one caught the horses and saddled them, the other would have made a fire and cooked the breakfast, which consisted generally of a nondescript dish of Mr. Buckingham's (who was appointed cook to the expedition), made with pemican, biscuit and butter. This with a kettleful of tea, as hot and strong as tea and water would make it, was eaten with a relish known only to those living in the open air and taking active exercise.—Breakfast over, things were packed, and we started generally at sunrise, and travelled till about noon, when we would stop at some good pasturage, and allow the horses to eat for a couple of hours, and cook dinner; then start again, travel till near night, or till we could find at one place the three essentials—water, wood, and grass. These we would find sometimes at five and six o'clock, or sometimes have to push on till eight or nine o'clock. When a suitable place was found the horses were let go, a fire made, and supper cooked. After supper, wood was cut, and a fire built to last all night. If possible, the horses were then brought in close to the camp and hoppled—that is, had their forelegs tied together to prevent them wandering far; the cart was then wheeled close to the fire, and, spreading the robes and blankets beneath it, we rolled ourselves in them, feet to the fire, and soon fell into a sleep, the soundness of which was in proportion to the fatigues of the day, the softness of the ground beneath, and the musical powers of the wolves who ocasionally gave us a serenade.

We left the settlement on the 16th October, the long Indian summer, as it is called, having just then commenced. Crossing the Assiniboine River at Fort Garry, we followed the river up on the west side till we arrived at Pembina, a small settlement immediately on the American side of the boundary line. The country here, like that at the settlement and between, is a perfectly flat treeless plain, and well adapted for agriculture, the only drawback being the scarcity of wood, which is only found in narrow strips on the banks of the river, and already most of it has been used for fuel.

Crossing the Red River here, we travelled through a low swampy country, dotted with small groves of aspen, and, along the banks of small streams, scrubby oaks. Here we began to find game in great abundance, prairie chicken, ducks, and the little ground squirrel, and occasionally fox, badger, elk, and the little prairie wolf, which generally annoyed us a good deal at night. In this part of the journey the rivers were bad to cross, being deep, and the bottoms of soft mud, into which the horses would stick till assisted out. This continued for about fifty miles, till arriving at Snake Hill River, we found the river bed sandy, and the land high and dry, consisting

of long, narrow sandy ridges, bordered on each side by marsh. These ridges, a singular feature in that part of the route, were generally only a hundred yards wide, and extended five or ten miles, almost invariably in a north and south direction.

At Sand Hill, the next river, we found the country, though still sandy, very hilly and very bare of vegetation of all kinds. This gradually merged into a level prairie again, with abundant vegetation. The next river, and the largest, was Red Lake River. This was crossed with a great deal of difficulty, on account of the rapidity of the current and the narrow width of the sand bar which formed the ford. However, by putting extra weight on the cart, to prevent it being swept off the bar, and both holding the horses' heads against the current, we finally got over. But here a change awaited us. After passing through the wide strip of oak, ash, and tamarack, that fills the wide bottoms of the river, and getting a view of the open country, as far as the eye could reach nothing could be seen but a scorched and blackened mass. The fire left by some careless hunter had spread and burned everything. This was a serious thing to us, as we knew that the fire had extended till stopped by the next river. However, after holding a council we determined to push on that day, in hopes of getting grass before night. Night came, and no grass, and at ten o'clock the horses began to show signs of giving out, so we camped where the fire had spared a few rushes.

Next day, at noon, we arrived at Wild Rice River, (so named from the abundant growth of tall grasses,) and this had stopped the fire.—Crossing this river, we travelled through a country with more timber than the last, and the surface of the prairie covered with boulders for many miles. At the next river—Buffalo River—the country became again very hilly, the hills inclosing innumerable beautiful little fresh water lakes, bordered as usual with oak. This continued to Detroit Lake, where the country became very rocky and densely wooded with oak, ash, beech, maple, poplar, and for the first time, we saw pine and spruce. At this lake we met a party of Ojibway Indians, with whom we exchanged courtesies, they giving us some fish, and receiving in return tea, sugar and tobacco. After remaining with us till ten o'clock, carrying on a rather unsatisfactory conversation by signs and illustrations in the sand, eating all that we could give them and stealing our tin cups and hatchets, they finally went off to their lodge. They were here catching fish for their winter's provisions with gill nets, and seemed to be taking them very rapidly. This lake, like all the lakes in this region, abounds in many kinds of fish, among which are whitefish, pickerel, perch, pike, and a little fish called goldeyes.

Leaving this lake, the trail passes through many miles of dense woods, consisting chiefly of oak and other hard woods. In these woods, and southward, is found the Ginseng (*Arabia quinquefolia.*) Crossing Otter Tail River, Rush Lake, and some small streams, we finally arrived at civilization again, in the shape of a collection of a dozen of houses, named in Minnesota maps Otter Tail City, and inhabited by travellers who purchase the furs of the Chippeways. After taking dinner here at a two-roomed hotel, for which we paid two dollars, we left the city, and crossed Leaf Mountain, the height of land or apex of the two great water sheds of the Red and Mississippi valleys. Here, as on the rest of the route, the prevailing timber was pine and spruce, with occasional tamarack swamps. The trail here followed down the course of Leaf River till it empties into the Crow Wing River. Here the trail ended, and crossing the river in a scow, we had now a bridged road forty-five miles to the little town of Crow Wing, where we arrived on the second of November, completing a trip of something over four hundred miles in fifteen days. At this place we left our horses, and took stages, 150 miles, to the city of St. Paul, and from thence by Mississippi boat and rail-road to Canada.

I may mention here that in St. Paul I noticed several barrels of Ginseng root which had been collected by Indians and others, and was intended for export from New York or elsewhere to China. This American Ginseng is the *Arabia quinquefolia*, a different species, it is believed, from the Chinese one, but nevertheless highly esteemed in that country. It is said to be used there as a medicine in cases of debility, but its medicinal properties are not so highly esteemed in this country. Its uses in China must be very exteusive, as independent of the Ginseng obtained in China, and the enormous quantities exported from America, imports are registered at Shanghai of the enormous quantity of 55,000 catties from the 11th Nov. 1856 to 30th June 1859. This root is found in abundance in the western part of Minnesota, principally in the woods and on oak ridges, and there are persons who make large sums by collecting it and selling it at St. Paul for one dollar per lb.; by sending it to New-York, they get a much larger price. Now, as this root is so valuable, and as the climate and soil in some parts of Canada resemble that of Minnesota, I wish merely to mention the possibility of cultivating it in Canada. Hitherto the market has been supplied by indigenious growth, and the consequent disappearance of the plant in many parts of Canada and the States, suggests the propriety of adopting measures by which its production may be increased by artificial means.

A list of plants collected at Fort Garry and along the route, with their localities, and critical remarks on the more interesting and obscure species, will be published in the Botanical Society's Transactions.

West Highland Ox.

It seems rather singular that among all the breeds of cattle which the necessity or fancy of our people has caused to be introduced into this country, the West Highland should have been overlooked. Judging from their characteristics and the circumstances under which they are reared in their native country, these cattle would be much better adapted to the roughest parts of the United States and the Canadas, than any of the breeds now kept. They have great hardihood, good fattening tendencies, and many of them are, as remarked by the late Mr. Hilliard, in his "Practical Farming and Grazing," as perfect in their form as any cattle on the face of the earth. They have besides, an originality and independence of character, so striking that they are never forgotten by a person who has once seen them. The writer of the account of the late show of the Smithfield Club in the *Mark Lane Express*, having spoken of various other breeds, grows eloquent when he comes to these rangers of mountain and moor. He says:—

"It was quite refreshing to turn to the West Highland cattle. All lovers of the originality, the flash and fire of a mountain breed, paused as their eyes scanned the shaggy mantle, the defiant horns, and wild eye. It was impossible to look at Mr. Heath's second prize dun steer, without being lost for a time to the vexatious jostling of butcher's greasy men. The mountain breeze in fancy fanned the cheek, the foot trampled the springy heather underneath, and the rugged form before us, with coat all palpitating with the morning dew, assumed its native dignity, and bellowed forth upon the echoing air its challenge to the leader of the advancing herd. It is reported that the Royal Ladies of England and France (Queen Victoria and the Empress Eugenie attended the show) spent more of their time in this class than all the others."

A discussion was held not long since by the Inverness (Scotland) Farmers' Club in regard to the breeds of cattle and sheep best adapted to different localitities, and the effect of various crosses, when the conclusion seems to have been reached,—"that they would have been better off had their energies been more directed to improving the Black-faced sheep and Highland cattle." The *Farmer's Magazine*, in giving a summary of the discussion, says, "The line of argument ran much in this way: The native Highland cattle and sheep will live on little or nothing more than what they can find on the hills; they will eat heather, and the Shorthorns will not. While they are thus left to 'rough it,' the new breeds are pampered and housed, although it was maintained their own beasts would pay quite as well for more food and warmth. But there was considerable difference of opinion on this point. Mr. Anderson, who opened the discussion, 'had himself some Short-horns, but he had the greatest liking for Highland cattle. He had some Highlanders, four years old, worth £30 apiece. When his Highlanders were four years old, he sent them to the London Christmas market, and he was never disappointed in the price they brought him. He had been disappointed with crosses, but never with Highlanders.'

"Mr. Frazer, of Fairlie, thought neither the climate nor their pastures were suitable for Shorthorns. He kept Highlanders, because he found the climate was most suitable to support that kind of stock."

Mr. Mackay, of Dinoch, would place Highland cattle in the same category as the Black-faced sheep. "Where cattle are fed on straw in winter and on heather in summer, of course a change from Highland to cross-bred cattle would be ruinous, inasmuch as a Highlander will fatfatten where a Short-horn would decline."

A late writer observes—"In estimating the merits of our mountain breed of cattle and sheep, too little credit is generally given to the superiority of the meat they yield for our tables on the one hand, and, on the other hand to the small quantity of produce that supports them in their native pastures for the manufacture of this superior quality."

The Magazine above referred to says—"The very best meat of all that comes to the table, either for flavor or fineness, is that of the Highland Ox, when he has been properly 'done by.' It surpasses alike the Galloway, the Devon and the Short-horn. Go to Badminster and ask the Duke how they tasted? or Mr. Thompson how they do? and the answer will be all in their favor." The Chairman of the meeting at which the discussion alluded to was held, observed that the Highland cattle were much in demand for keeping in the parks of the English Aristocracy, and that "their flesh was also relished in the Baronial Hall." We have noticed that on most estates of gentlemen in England and Scotland, the Highland cattle are kept to afford beef for home consumption, on account of its superior quality. Taking every view of the case, we think the writer of the article in the Magazine is entirely correct in advising increased attention to this breed.—*Boston Cultivator.*

Importance of Agriculture.

Agriculture has been a theme for the master minds of every age, Poets have sung its praises and Philosophers proclaimed its importance. And when we consider agriculture is, (as Dr. Paley says,) the "immediate source of human provision,' that it does not merely change or modify the form of national riches, but actually creates an annual fund of wealth,—and that at the same time it is the foundation of other branches of national industry—for, (in the words of Gibbon) the products of agriculture are the materials of Art—can we wonder at the

fact? Is it not rather a mattter of surprise that, even in our own country, though much has has been said in favor of its pleasures and profits, comparatively little has been *done* towards encouraging its study,—that the first symptoms of improvements in its practice were scarcely discoverable two or three centuries ago,—and that all that has yet been done towards elucidating the principles upon which enlightened practice depends, or towards carrying these principles into operation, is the property of the present age. To speculate on causes producing this apathetic if not retrograde, practice of Agriculture in England, (for the Romans left Britain a much greater amount of practical knowledge on the subject than was employed even in the Elizabethan age,) is not our object. The argument we would urge is, that however far scanty the wants of a limited population may account for the scanty efforts made to supply those wants, the increased wants of an increased and still increasing population, are now such, as in some measure explain the increased efforts which have been made lately, and *demand a continuance of them*, in order that the riches of our country may continue to increase, and that a great population may obtain a great amount of comforts. In illustration of our assumption of increased wants, (upon which we base our conclusion of the necessity for an increased supply of the products of agricultural skill,) we have, according to the calculations of the Poor-Law Commissioners, the fact that the increase of population in England is 230,000 per annum, and that is an increase requiring annually 59,000 tenements, (a Manchester and a Birmingham), 27,227 cattle, 64,715 lambs, 70,319 sheep, 7,894 calves, (equal to the produce of 81,000 acres of pasture land); also, at 56 oz. daily for a man, wife, and three children, 105,000 qrs. of wheat, equal to the produce of 28,058 acres of land, at 30 bushels (which is more than the regular average) per acre. Being altogether the produce of 109,000 acres of good land required every year to feed the increase of our population. To those tinged with Malthusian scepticism, and who may doubt the capability of Agriculture to keep pace with population, it will not be necessary to urge the existence of a wise and beneficent law by which productiveness and population progress by equal steps. The fact that our present population of 15 millions is more plentifully supplied with bread than one of 2 millions was 250 years ago, is the best evidence of what *has been done*. And the calculation of Mr. Pusey, that if we can raise the quantity of wheat a single bushel per acre, on the lands now under cultivation in England and Wales only, it will add to our income 475,000 qrs. of wheat, which, at 50s per quarter, is equal to £1,200,000, or the interest of a capital of £24,000,000 sterling, gained forever to the country, is no small incentive to future effort. If such great results, then, arise from such limited means, when we look at our uncultivated, and our half-cultivated acres—if we examine what observing practice has already accomplished, and view the structure of inductive facts which science has already erected, can we doubt either that there are 'fresh fields and pastures new' in the terra incognita of Agriculture, or that we shall be able to find them? In no branch of this agricultural inquiry, however, can we labor with a greater chance of success, than in that which relates to the nature and application of manures—and especially of those manures which are now wasted or neglected. Manures are matters which supply the plants with food—the materials from which, in obedience to certain laws, it erects, maintains, and perfects its structure. By acquiring, therefore, a correct knowledge of their economy, we acquire the power of ministering to the wants of vegetation, and of increasing the products of the soil.—*Hannam 'On the Economy of Waste Manures.'*

Agriculture in English Literature.

Lavergne, the distinguished French Rural economist, in commenting on the English taste for a Country life, has the following:

The national literature, as expressive of manners and customs, contains throughout marks of this distinctive trait in the English character. England is the country of descriptive poetry; almost all their poets have lived in the country and sung of it. Even when English poetry took ours for its model, Pope celebrated Windsor Forest, and wrote pastorals; if his style was not rural, his subjects were. Before him Spenser and Shakespeare wrote admirable rustic poetry; the song of the lark and nightingale still resounds, after the lapse of centuries, in Juliet's impassioned farewell to Romeo. Milton—the sectarian Milton—employed his finest verse in a description of the first garden, and in the midst of revolutions and business, his fancy carried him towards the ideal fields of *Paradise Lost*.

But it was principally after the Revolution of 1688, when England, now free, began to be herself, that all her writers became deeply impressed with the love of country life. It was then that Gray and Thomson appeared; the first in his celebrated *Elegies*, and among others his "Country Churchyard," the other in his poem of the *Seasons*, striking in delightful sounds this favorite cord of the British lyre. The *Seasons* abound with amiable description; it is sufficient to instance the hay-making harvest and sheep-shearing, the latter being already in Thomson's time, a great business in England; and among the pleasures of the country, his account of trout-fishing. The angler, at the present day, may find in this little descriptive picture, his favorite art fully detailed. The feeling is everywhere lively and spontaneous—enthusiasm, real and deep, for the beauties of nature and the sweets

of labor. To these Thomson joins that quiet high religious feeling which almost always accompanies a solitary and laborious life, in the presence of the never-ending wonders of the vegetable creation. It pervades the whole poem, especially in the concluding part, where he likens tne awakening of the human soul after death to nature after winter.

The New Settlements in Upper Canada.

We copy from a pamphlet entitled "Emigration to Canada," of which a third edition has recently been published by authority of the Bureau of Agriculture, the following extracts from Reports from the HastingsRoad Settlement, as showing the Agricultural capabilities of that new part of the country. The new settlements are the Hastings Road; the Mississippi Road; the Bobcaygeon Road; the Addington Road; the Opeongo Free Grant Road; and the Muskoka Road; all in that part of Upper Canada, lying north of the old counties on Lake Ontario, and between the Georgian Bay, Lake Nippissing and the Ottawa River, and which has heretofore been generally considered not very promising for agricultural settlement. The report from the Hastings Road may be taken as a falr sample of the others.

They all convey the most favorable accounts of the settlers, and of the large amount of produce they have raised on their newly cleared lands. The Hastings Road Settlement is very nearly the centre of Canada West, and due north from Belleville, on the Bay of Quinté. Mr. Robert Bird, in a Report received by the department on the 6th September, 1860, thus writes :—

"I have just returned from the Hastings Road, and received your favour of the 4th of August, requesting information about the crops on the said road. In reference to them I never saw any thing like them on the whole length of the Hastings Road, from Elliot's, on the fifth range, five miles north of the Peterson Line, and about fifty miles from the Town of Madoc. The principal part of all kinds of grain is now out of the way of frost. In consequence of the early frost of last year, almost the earliest on record, the farmers managed to get in their grain in such good time this year, that it is now almost ready to harvest. Some very fine fields of Spring Wheat were cut on the 18th of August. I have examined a good portion of this crop, and have no doubt but that it will yield from 30 to 40 bushels to the acre. I can hardly give you a description of the oats: I never saw such in any country; they stand from three to five feet high, are well filled, and are nearly all about ready to cut. I cannot say what they will produce to the aacre, but I think not less than from 60 to 70 bushels. Potatoes are abundant and no rot has yet appeared; Turnips are promising as well as the people desire; peas and rye are very good, but there was not much of these sown; very little Indian Corn was planted, but I saw some pieces that will be a fair crop unless some very unusual frost cuts it off. Hay is an extraordinary fine crop: there will be enough of timothy hay in these settlements for the farmers' own use, and a supply for all the lumbermen. It was from thirty to forty dollars per ton last winter, but it is thought it will not be more than ten dollars next winter. You would be surprised to see the amount of grain the settlers have got this year. There was not much Fall Wheat sown, but what there was did well. I was at Elliot's on the 18th August, and I never saw crops of all kinds of grain, and although the land is so new he has an excellent garden of vegetables. He put in a small quantity of Fall Wheat, and I never saw better; it was then ripe and the straw was bright: I rubbed out one head and I counted 72 large plump hard grains. The land seems well adapted for Winter Wheat. The family is very industrious, they appear contented and happy; their prospect is good. The inhabitants throughout the whole length of the road, with very few exceptions, appear well satisfied with their location. The Doyle settlement, near the Peterson line, is a very prosperous looking place, and will soon be a very fine portion of the country. They have abundance of produce, but they require the completion of the Mills on the Papineau River to make them comfortable: the man who is in possession of the mill site has not the means to erect it, and semething should be done to get up the mills forthwith. There is a good farming county north, south, east, and west, of the site. Mr. Robinson is doing a great deal for the settlement of the road and the lands adjoining; his Saw Mill is in full operation at Lamab's Lake, and he will have a grist mill in operation about the middle of October. He has spent all his means in improving this part of the settlement, and deserves government encouragemeut. The settlement east of the Hastings Road, on the Peterson line, is in a very prosperous state; their crops are excellent, and they are making large improvements. I saw Messrs. Lake and Vanallen, who moved there from Thurlow. They told me they would not move back on any account; their families are contented and happy. There are eight families in the settlement, even so many miles back, and a prospect of a grcat many more soon going in.

"I have taken particular notice of the country for ten miles on either side of the Hastings and Peterson Line of roads. The quality of land on the first three ranges is of a lively loamy soil of a reddish cast, very warm and productive, but

this part is much interspersed with shallow rock, intermixed with granite, and does not contain more than forty-five per cent. of good ploughland.

"The fourth and fifth ranges of Townships are chiefly all good farming land, averaging seventy-five per cent. of good land for 18 or 20 miles wide, east and west of the Hastings Road. The Townships of Burton and Harcourt, through which we have just finished the Government Road will be a very fine country: the soil is more mixed with clay and, although hilly, there are no ledges or rock, and but few rolling stones. The timber is chiefly Maple, Beech, Basswood, and Birch, with a good suppy of spring creeks and mill privileges. Many of the settlers have informed me that they have written for their friends and acquaintances, and are daily picking out lots of land for them, so that the increase of settlers will, I expect, soon be more extensive than it has been; and I am satisfied the prospect of Settlers would be far better than if they went to the Far West. The settlers are enjoying excellent health, there being no illness of any consequence amongst them. The freedom from fever and ague, and the abundance of pure spring water, are very great advantages which our Settlers enjoy over those of the Far West. I have only to add that prices of every description of farm produce are remunerative and even higher in the back settlements than in the frontier towns, on account of the extensive manufacture of lumber which is carried on without intermission, and which is likely to continue for ages, as the supply is unlimited."

Mr. M. P. Hayes, the Crown Land and Free Grant Agent at Madoc, thus writes:—

"I am in receipt of your letter of the 4th inst., enquiring about the crops and the condition of the Settlers on the Free Grants, &c. I spent the last five days of July and the first weeks of this month on the road, and I am happy to be able to say the prospects are most encouraging. The season has been every thing that we could wish for so far, and was largely taken advantage of by the Settlers. The Hay crop was nearly all cut and saved, and the yield is large. The quantity of Timothy Hay saved on the road this year will be more than quadruple that of any former year. The little Fall Wheat that was sown this season looks well.

The Wheat Midge, which had attacked the wheat in the old Townships, has not appeared as yet in the new back Townships. Spring Wheat has been extensively sown and was looking splendidly when I was up. They are cutting it in some places now, and are well satisfied with the yield. Immense quantities of Oats have been sown and Potatoes planted, and both are looking very well. I cannot give you particulars of the yield as yet, as it is too early; but in the meantime you may calculate upon every crop being above the average, unless some unforeseen change take place in the next week or two.

Use the Fanning Mill Thoroughly.

It will pay to clean grain thoroughly before offering it for sale. A careless or dishonest man has little reason to congratulate himself upon having sold a quantity of chaff, cockle seed, and other foul stuff, for the price of wheat. Dealers in grain have sharp eyes for anything that affects the market price, and they readily detect wilful or careless neglect to properly clean the crop, and a reduction of from two to four or more cents per bushel is the consequence. It requires but a few pounds weight of refuse among grain to greatly damage its appearance. an amount which would bring fifty cents if sold at the price of wheat will reduce the market, value of twenty-five bushels from four to five cents per bushel, thus entailing actual loss, instead of gain, as some, by their practice, seem to suppose. Grain merchants sometimes take advantage of the fact, that foreign matter in grain deteriorates the market value below the actual damage caused by its prescence. They put large quantities of poorly cleaned grain through the fanning mill, take out one or two cents per bushel in the weight of foul seeds, etc., and are able to sell the improved grain at four or five cents advance per bushel, all of which might have been realized by the producer, in return for a few hours extra labor.—*American Agriculturist.*

Light for Animals.

A correspondent of the *Homestead*, in an article on fattening hogs, gives the following advice:—"One more important item of advice, and that is, locate your pen where your hogs can have the benefit of light. I don't mean merely *daylight*, but the full, bright light of the sun: it will add to their cheerful contentment, as it does to the human species, and physiologists declare that, other things being equal, families who occupy appartments in the sunny side of dwellings are the most healthy and happy. Although the comparison may, to sensitive nerves, appear odious, still it is beyond our power or province to change the established laws of nature. I never knew of a hog or any other animal, kept under the north side of a barn or other building, where the dampness and darkness is never penetrated by the sun's rays, and where the animal was employed as the scavenger for other animals, to be sleeklooking, fat, clean or quiet. I have seen many a pen where the mud and offal was two or three feet deep, and no place of retreat left for the poor occupants upon a higher spot, excepting the bed floor, and that unfurnished by straw."

Linen was first made in England, in 1253.

Hats were invented for men in Paris, 1403.

Agricultural Intelligence.

Stock to Australia.

Editor Agriculturist.—I inclose to you an article from the Fifeshire and Galloway Courier, of December 11th. Will you be kind enough insert it in your valuable Journal.

Being personally acquainted with Mr. Fraser, I can recommend him to any of my Canadian friends who intend to import horses or cattle. He has had long experience as a salesman of high standing in Liverpool, and is worthy the utmost confidence both for ability and trustworthiness.

Wm. Roddick.

Port Hope, Feb., 1861.

Clydesdale Stallion "Blackleg."—Advices of date 24th September by the last Australian mail inform us that the ship *Gosport*, having on board this valuable horse, arrived at Melbourne on the 7th of that month. The voyage, although a protracted one, was nevertheless peculiarly favorable for the safety of the animal: fine weather prevailing during the whole passage. He was landed free from either bruise or scar, and in perfect health. The importers express their extreme satisfaction with the selection made by their agent, Mr. Fraser, of Fairfield, Liverpool; as also with the whole of his arrangements in respect to fitting out, shipping, &c. A great number of the farming classes around had paid a visit to see the horse since reaching his destination, and it is considered that his enterprising owner will clear fully £500 by him during the first season, which commences in that country early in October. It appears that previous of the actual purchase of this highly valuable animal from Mr. Crawford, Strathblane, Stirlingshire, at least two other parties had the refusal to him at the same figure, £500, but stickled at the seemingly unprecedented price, and it speaks highly in favor of the discrimination and judgment displayed by Mr. Fraser, who, without taking counsel or advice from any one whomsoever, promptly concluded a bargain which promises to turn out a lucrative one for his Gallovidian friends at the Antipodes.—These gentlemen, writing to Mr. Fraser, say:—The article in the *N. B. Agriculturist* was copied into all the colonial papers, and you are *known to fame* in Australia. I think you would get a good many orders if inclined to act in the same capacity again. Our place is visited by scores from all quarters, every one anxious to see the horse.

During the past year, four asteroids and four comets were discovered. The number of asteroide now discovered is sixty-two.

Horticultural.

Correction.—In the Agriculturist of January 16th, page 49, Mr. Sharpe of Lockport, is made to say, that "in transplanting *Pear Trees*, he is in the habit of cutting off all the top," &c. It should have been printed *Peach Trees*.

Orchard Culture in Canada.

To the Editor of the Agriculturist.—On examining the Transactions of our Board of Agriculture for the year 1859, I find a couple of essays on Fruit Culture, one by Dr. J. Beattie of Nichol, County of Wellington, the other by Mr. R. B. Werden, of Picton, Prince Edward County, which contain so much information of exactly the character most needed, that I can not refrain from calling attention to them again through your columns. The Fruit Growers' Association of Upper Canada is endeavouring to bring out just such information as this, and I trust that these gentlemen will not fail to become members, with many others, whose united experience will form a more safe guide to the Canadian fruit planter, than any information we now possess.

There is indeed a large part of Canada, by far the larger part, to the climate of which it is a stretch of courtesy to apply the term "temperate." To me it seems that as the country is denuded of its forests and laid bare to the sweep of our wintry winds, the severity of the climate is only increased, and the vital powers of both animal and vegetable constitutions put to the greater test. Intense cold, as indicated by the fall of the thermometer merely, is not so trying to animal and vegetable life, as are the long continued blasts of frosty winds which, by constantly and rapidly changing the surrounding air, take off the last remaining particle of warmth and cause the frost to penetrate with an intensity of which it is wholly incapable in a still atmosphere. To these winds, so prevalent in Canada West, am I disposed to attribute in part the death of many of our fruit trees, and believe that were the orchards of Canada well protected from their freezing breath, some of the varieties now considered tender would be found quite hardy. Not that I dissent from Dr. Beattie's proposition that some varieties of even the apple are *constitutionally* unadapted to our climate, but that could the trees be protected from these winds the number of such varieties would be decreased.

But the winds are not the only evil from which the trees suffer in our climate. It may indeed seem strange to attribute a share of our trouble to the pleasant sunshine, but nevertheless it contributes its part to the sum of our troubles. In February and March it is no uncommon thing for a night of intense cold to be followed by a clear bright day, in which the unclouded sun shining on the long, naked trunks of the trees, aided and intensified by the reflection from the

snow, very suddenly thaws the exposed side, which is again suddenly and severely frozen when the sun declines. The result of this is that on the side of the trunk so exposed the bark is killed, sometimes all the way from the ground to the branches, in width varying from a narrow strip to one-third of the entire circumference of the tree. I think Mr. Werden must have had some experience of this, for he speaks of "trunks blighted and scalded, and the bark peeling from the body of the trees."

Now, in addition to the bad "nursery practice," (so well pointed out by Dr. Beattie, and in relation to which I may hereafter ask leave to say something,) I believe I have indicated two causes of the death of apple trees, the latter of which is considerably dwelt upon by Mr. Werden, though he attributes it to the sun in August instead of March. Could these evils be removed, not a little would be accomplished towards the successful culture of the apple in the bleakest and coldest parts of the Province. Nor is there physically any difficulty in overcoming these obstacles; and yet there is a difficulty, one less easily removed than might be supposed, and that is in the *habits* of fruit growers.

The most direct and simple method of protecting our fruit trees from the winds and sun is indicated in each of these essays, and practisep by the several writers. By growing the trees in the orchard with low heads, allowing the branches to form near the ground, they are protected by the undulations in the surface of the country and the very farm fences scattered to windward, breaking the force of the winds and causing them to sweep over their heads. Mr. Werden plants his trees twenty-five feet apart, with an additional tree in the centre of each square. The reduction in the size of the tree by forming the head low is thus more than compensated by the greater number of trees planted on an acre, and by thus bringing them nearer together they protect each other, something like the trees in the forest, the winds sweeping over them not through them. And where this is not sufficient, a belt of evergreens set on the windward side will be found a great auxiliary. The bodies of the trees also are protected from the effects of the sun by their own branches, which break the rays direct and reflected, and protect the trunk from all great and sudden changes of temperature. So then the protection of the trees from injury from these causes is at once simple and efficient; for Mr. Werden says that his trees "have stood the hard winters of 1855, '56 and '57 wholly unharmed, while others with long trimmed up trunks, are blighted and scalded and the bark peeling from the body."

But our orchard planters are so accustomed to taking an annual crop of grain or hay from the orchard, or of making it the pasture ground of their young cattle, that it is not an easy matter to break up this habit. They see at once that wagon loads of grain and hay are not to be thought of among such low trees, and that the cattle would soon make a finish of them—and the plow, the plow: that constant friend and almost constant companion of the husbandman, how can he use that in such a place? and his heart faints at the thought of being obliged to leave that tried and trusty implement behind when he goes to take care of the orchard. *Take care of the orchard?* Yes, that is what he calls "taking care of the orchard." What if the plow do cut up and destroy all the small, fibrous roots that lie near the surface, an apple tree ought to do without them. What if the whiffle trees now and then rub the bark off, the wound will grow over again. What if the rank growing grain and the spreading grass drink up the gentle showers and evening dews, he has seen apple trees grow well enough with grain and grass among them. He has seen so many orchards live, and grow and bear fruit in spite of such treatment, that he has begun to believe that this is the way to *take care of an orchard.*— And just here it is, in the *habits of the husbandmen* will be found one of the greatest difficulties to be surmounted.

But Canadians are men of intelligence and thought. These essays are a step in the right direction, and though their authors are in this respect in advance of their age in orchard culture, yet their pens and their practice are the very things needed to convince us of our errors and to induce us to follow their example. They can not do their countrymen a greater service in the matter of fruit growing, than to show them the advantages of such orchards, and prove by the results of their own experience how much better suited they are to the peculiarities of our position and climate. For my own part I hail these essays as a step towards the breaking up of old prejudices and the establishment of a new system of training and planting fruit trees adapted to the exigencies of our position. If the gentlemen would be kind enough to furnish you for publication a more detailed statement of their method of pruning their trees in the orchard, and of cultivation, it would be a very valuable paper. We also wish to know if they find any inconvenience on account of the limbs when loaded with fruit falling to the ground? Whether the fruit hangs any better on the trees or more come to the barrel in a sound and unbruised condition, than with high pruned trees? Whether the trees bear full crops any oftener, so that on taking an average of years they shew any less number of barren seasons? Whether the trees are any more or less liable to the attacks of insects, such as the apple tree borer or the bark louse? Whether any varieties are found to endure the climate in this way, which prove tender on the seven feet of trunk system? Whether the number of bushels of fruit per acre is more or less? Whether the trees come into bearing sooner or later? Whether the cultivation and management of the orchard and gathering the

fruit, require greater or less care and labor?—Whether the fruit is likely to be smaller or larger, any more or any less scabby or otherwise imperfect? And if we could also have a list of the different varieties that have been tested in their respective localties and found to be not sufficiently hardy, the Canadian public would be under further obligations. Will not the gentlemen be kind enough to let us hear from them through the columns of the *Canadian Agriculturist*. Yours truly,

St. Catharines Nurseries, Feb. 7th, 1861. D. W. Beadle.

Fruit Growers' Association.

We copied an account of the recent meeting at Hamilton of this Society, from a daily newspaper in our last, but having since received the offlcial report, we insert it also in full. It will be found to contain matter of much interest to fruit growers:—

FRUIT GROWERS' ASSOCIATION OF UPPER CANADA.

The annual meetmg of this association was held at Hamilton on the 16th and 17th of January last. Representatives were present from the counties of Wentworth, York and Peel, Lincoln, and Brant.

The first Vice-President, Dr. Hurlburt, read an address on the climate of Canada, as adapted to the culture of the grape.

It was then moved by Mr. Beadle, seconded by Mr. Leslie, that a vote of thanks be given to Dr. Hurlburt, and that he be requested to furnish a copy of his address for publication in the *Canadian Agriculturist*.—Carried unanimously.

Three interesting reports on the fruit crops of 1859 and 1860 were then handed in and referred to the committee on publication; one of them was from the late Judge Campbell, of Niagara, the first President of the Association, another from Mr. Arnold, of Paris, and the third from Mr. Beadle of St. Catharines.

The Association then proceeded to the election of office bearers for the ensuing year, with the following result:

Judge Logie, Hamilton, President.

George Leslie, Esq., Toronto, 1st Vice-President.

D. W. Beadle, Esq., St. Catharines, 2nd do.

Dr. Hurlburt, Hamilton, Secretary.

J. A. Bruce, Esq., Hamilton, Treasurer.

The following Committees were then chosen:

The General Fruit Committee.—Messrs. Fleming and Gray from York and Peel; Messrs. Freed and Murray from Wentworth; Messrs. Taylor and Smith from Lincoln; Messrs. Arnold and Whitlaw from Brant. To act with the office bearers of the Society, and the delegates from the affiliated Horticultural Societies.

Committee on Publication and Management.—The President and Vice-Presidents and Secretary.

Sub-Committee on Orchard Fruits—Messrs. Leslie of Toronto, Beadle of St. Catharines, and Murray of Hamilton.

Sub-Committee on other Fruits—Messrs. Arnold of Paris, Gray of Toronto, and Meston of Hamilton.

At an adjourned session held in the evening, the President in the chair, it was resolved to take up the consideration of fruits suitable for general cultivation in Upper Canada.

Mr. Leslie of Toronto, Mr. Beadle of St. Catharines, Mr. Arnold of Paris, and Mr. Smith of Grimsby exhibited a great variety of winter apples, among which were two new varieties, the Wagoner and the Dominie, shown by Mr. Beadle. Mr. Arnold also exhibited several varieties of winter pears, and Mr. Smith specimens of cherries and strawberries preserved in spirits.

The Association then entered upon the discussion of fruits, beginning with apples—early apples.

1. *Early Harvest Apple.*—It was agreed that this apple is of first rate quality, the tree a good bearer, and generally hardy. Mr. Arnold said he had found it rather tender at Paris.

It was agreed to recommend it for general cultivation.

2. *Red Astrachan Apple*—Quality varies from very good to best; tree very hardy; a good bearer. Mr. Leslie considered it a good bearer, and a good market fruit. Mr. Beadle recommended it as a good cooking apple. The President said if allowed to remain too long on the tree it is apt to become dry and mealy.

It was agreed strongly to recommend it for general cultivation.

3. *Duchess of Oldenburgh Apple.*—Quality varying from very good to best. Tree hardy, a vigorous grower, prolific; a good annual bearer, a very beautiful fruit.

It was agreed to recommend it for general cultivation.

4. *Sweet Bough Apple.*—A large fine fruit, sweet; tree a slow grower and tender in some localities, a moderate but sure bearer. The best sweet apple.

It was agreed to give it a further trial before recommending it.

5. *Early Strawberry Apple.*—Quality good; tree hardy; a moderate, and in some localities, a shy bearer; fruit pretty; considered by one of the members of the association to be a poor, very acid, inferior fruit.

It was agreed not to recommend it.

6. *Early Joe Apple.*—It was generally agreed that this fruit is of the best quality for the table.

Tree of dwarf habit, very hardy, and a good bearer.

It is recommended strongly as a dwarf tree for garden culture.

7. *Summer Rose Apple.*—Quality good, very good, and in some places best; tree hardy. A moderate and in some places a good bearer. Mr. Arnold stated that it is an abundant bearer on Paradise stock. Considered a feeble grower by Mr. Beadle.

Recommended for further trial.

8. *Primate Apple.*—Quality good, best; large apple; tree hardy; a stout grower; bearing qualities from fair to very good.

Recommended for further trial.

AUTUMN APPLES.

1. *St. Lawrence Apple.*—Quality from very good to best. Mr. Beadle said it was variable in quality and apt to be insipid. It is of better quality towards the north than in the southerly parts of the Province. Tree hardy and vigorous; prolific in some places, in others only a moderate bearer.

It was agreed to recommend it for cultivation

2. *Fameuse Apple.*—The best table apple of the season; tree very hardy and very prolific.

It was unanimously agreed to recommend it strongly for general cultivation.
specially in the colder parts of the Province.

3. *Fall Pippin Apple.*—Quality from very good to best; tree hardy, but said by Mr. Leslie to be occasionally tender; moderate bearer.

It was agreed to recommend it for general cultivation.

4. *Porter Apple.*—Quality very good; tree hardy; moderate grower; bears well. Not generally known.

It was agreed to recommend it for further trial.

5. *Keswick Codlin Apple.*—Fruit large; best quality for cooking; tree very hardy; grows vigorously; is an early and good bearer; considered by some very prolific; good for cooking before it is ripe.

It was agreed to recommend it for general cultivation as a cooking apple.

6. *Hawthornden Apple.* — Fruit large and handsome; good for cooking; tree very hardy; an early and good bearer.

It was agreed to recommend it for general cultivation as a cooking apple.

7. *Golden Sweet Apple.*—Fruit very large; good quality; best sweet; good for market; tree very hardy; a moderate grower and a good bearer.

It was unanimously agreed to recommend it for general cultivation.

8. *Twenty Oz Apple.*—Fruit very large; tree hardy; growth stocky; a moderate bearer.

It was agreed to recommend it for further trial.

9. *Gravenstein Apple.*—Best in all respects.

It was unanimously agreed to recommend it for general cultivation.

10. *Benoni Apple.*—Mr. Arnold said it was of the best quality; tree hardy; a moderate bearer.

Not having been sufficiently tested, it was agreed to recommend it for further trial.

11. *Jersey Sweet Apple.*—Fruit large; best quality of sweet apples; tree hardy; a moderate and in some places an abundant bearer.

It was agreed to recommend it for further trial.

12. *Fall Jenettin Apple.* — Fruit large; quality very good; tree hardy; a fair bearer.

It was agreed to recommend it for further trial.

13. *Hubbardston Nonsuch Apple.* — Fruit large; very good both for cooking and eating; tree hardy; a good grower and abundant bearer.

It was agreed to recommend it for further trial.

WINTER APPLES.

1. *Baldwin Apple.*—Best as to size, quality and keeping; tree tender to the north and west, elsewhere hardy; an early and good bearer.

It was agreed to recommend it as one of the best winter apples for general cultivation.

2. *Rhode Island Greening.*—One of the best winter apples; good for market; tree very hardy at Hamilton and St. Catharines, but found to be tender at Paris and towards the north.

It was agreed to recommend it for cultivation.

3. *Spitzenburg Apple.*—Best winter table and best market apple; tree hardy but a slow grower; a good bearer at Hamilton; at Toronto, St. Catharines and Paris found to be only a moderate bearer.

It was agreed to recommend it for cultivation.

4. *Ribston Pippin Apple.*—Best quality for table and market; tree hardy; a moderate grower; a good and early bearer.

Agreed to recommend it for cultivation.

5. *Roxbury Russet.* — Quality good; large sized apple; hardy; a rambling grower. At Paris Mr. Arnold found it only moderately hardy, and a moderate bearer; elsewhere it is found to be prolific.

Agreed to recommend it particularly for its keeping qualities.

6. *American Golden Russet Apple.*—Fruit larger than Pomme Grise; a fine keeper; a good market fruit; tree hardy; a good grower and good bearer; the best russet.

Agreed to recommend it for cultivation.

7. *Northern Spy Apple.* — Fruit large and hangs well on the tree; best quality; keeps well; a handsome apple; hardy everywhere; a good bearer.

Agreed to recommend it for general cultivation.

8. *Swaar Apple.*—Fruit of best quality; tree hardy with a rambling growth; a good bearer if well cultivated in sandy, but poor bearer in clayey soils; at Paris tender in nursery; a good keeper.

Agreed to recommend it for cultivation.

9. *Newton Pippin.*—Agreed to defer consideration of this fruit.

10. *Pomme Grise Apple.*—Best small russet; long keeper; good all the winter; tree very hardy; a good bearer.

Strongly recommended as a table apple for all parts of the Province.

11. *Yellow Bellflower Apple.*—Fruit large; has a large core; quality very good for eating and cooking; tree hardy; a poor grower and poor bearer. Not recommended.

12. *Belmont Apple.*—Fruit large; yellow; good for table and cooking; tree very hardy; a good bearer.

Agreed to recommend it for further trial.

13. *Wagener Apple.*—Fruit of best quality; large and beautiful; tree very hardy; very prolific; an early bearer; best in flavor, beauty, growth and hardiness.

Agreed to recommend it as a new apple of great promise.

14. *Talman Sweeting Apple.*—Best winter sweet apple; very hardy in some localities; does not succeed well at Toronto; prolific; a good keeping apple.

Agreed to recommend it for further trial.

15. *Beauty of Kent Apple.*—Fruit large; good for cooking; very handsome; tree hardy; a very good bearer.

Agreed to recommend it for further trial.

16. *Colvert Apple.*—A good cooking apple; very handsome; a fast growing tree.

Agreed to recommend it for further trial.

17. *Westfield seek no farther Apple.*—Fruit of best quality; good size; tree hardy and vigorous in some localities; does not succeed well at Toronto; a good bearer and keeps well.

Recommended as worthy of further trial.

18. *Vandevere Apple.*—Varies with soil; best on light, poor on heavy soils; not worth growing at Toronto; a good bearer on suitable soil. Not recommended.

19. *Rambo Apple.*—Quality very good; fruit medium size; keeps through January; tree erect and hardy; a prolific bearer. Mr. Leslie says it is very hardy at Toronto, but fruit small and scabby.

Agreed to recommend it in suitable situations.

20. *Dominie Apple.*—Fruit very handsome and good; a new apple; promises well.

Recommended for trial.

At an adjourned meeting, held on the following day, the first Vice-President in the chair, the consideration of Pears was taken up and the following varieties were mentioned:

1. *Madeleine Pear.*—Fruit of best quality and earliest; small sized yellowish green; tree hardy; a strong upright grower; very good bearer.

Agreed to recommend it for cultivation.

2. *Bartlett Pear.*—Tree tender about Toronto; too tender for northern parts of the country. Where it suits it is a first rate fruit either as a dwarf or a standard; an early bearer; hardy at Paris and Hamilton, where it is a universal favorite.

Recommended for cultivation south of the line of the Great Western Railway.

3. *Osborne's Summer Pear.*—Fruit of best quality; medium size; prolific; tree hardy at St. Catherines; very good; one of the best at Toronto.

Recommended for further trial.

4. *Tyson Pear.*—Best quality of fruit; medium size; tree hardy; succeeds well on the quince; very good and very productive at Toronto and Hamilton.

Recommended for general cultivation.

5. *Belle Lucrative Pear.*—Best quality; size full medium; hardy and very prolific at St. Catharines. Poor at Paris and Toronto and tree tender. At Hamilton fruit good in every respect; high flavored.

Recommended for further trial.

6. *Beurre de Giffar Pear.*—Quality best; hardy but slender.

Recommended for further trial.

7. *Louise Bon de Jersey Pear.*—A universal favorite at Toronto, Hamilton, and Paris. Poor in flavor at Catharines; very hardy and prolific; a good grower.

Recommended for general cultivation.

8. *Flemish Beauty Pear.*—Quality good; fruit pretty; a great bearer and early; succeeds well at Toronto; does not succeed well on quince.

Recommended for general cultivation on pear stock.

9. *Beurre d'Anjou Pear.*—Good; flavor best; fruit large; tree hardy; does well on quince; moderately productive; succeeds well at Paris and Toronto.

Recommended for further trial.

10. *White Doyenne Pear.*—Quality best; tree perfectly hardy at St. Catharines and Hamilton, where it is considered one of the best pears; not very hardy in Paris and Toronto; fruit not known to crack in Canada.

Recommended for further trial.

11. *Seckel Pear.*—Quality best; small size; tree hardy and prolific; rather a slow grower; hardy every where.

Recommended for general cultivation.

12. *Duchesse D'Angouleme Pear.*—A fair grower; tree rather tender and a poor bearer; moderate bearer and hardy at Catharines and Paris. Fruit large; none better as a market fruit.

Recommended for further trial.

STRAWBERRIES.

On motion, the list of apples was laid on the table, and the Strawberries taken up.

Wilson.—Excellent flavor; enormous bearer; very hardy.

Recommended for general cultivation for market.

Jenny Lind.—Early, large, prolific; at Toronto it ranks next after early scarlet.

Recommended for general cultivation.

Burr's New Pine.—Finest in flavor of all the strawberries; hardy and a good bearer.

Recommended for general cultivation.

Trollope's Victoria.—Late, large, excellent flavor; hardy, not valuable for market.

Recommended for gentlemen's gardens.

Monroe Scarlet.—Had proved a good bearer, of good flavor, and hardy at Paris, Grimsby, and Toronto; but at Toronto did not bear well.

Triomphe de Gand.—Had failed at Paris, but every where else it proved to be of the finest flavor, hardy, and one of the most promising new varieties.

Hooker.—Much admired for size, beauty, and flavor; but was tender in many localities, and liable to winter kill.

RASPBERRIES.

Franconia.—Mr. Leslie of Toronto,—strong cane; berry dark red; prolific; the most hardy variety; flavor best; very valuable for market. Mr. Holton of Hamilton,—something too acid for table; best for cooking; flesh firm; plant hardy. Mr. Freed, of Hamilton,—not as luscious as some, but very good; valuable for market. Mr. Murray of Hamilton,—very good in every respect.

Recommended for general cultivation.

Brickle's Orange.—Mr. Beadle of St. Catharines, had fruited it only one year, it bore the winter well without protection, and fruited well; fruit rich and fine. Mr. Leslie, of Toronto, found it tender. Mr. Holton, of Hamilton, had grown it on poor soil, and then it proved a poorer bearer than Franconia; flavor very good; plant not very hardy. Mr. Freed, of Hamilton,—quite hardy with me; strong grower; left it unprotected for three years, and it bore good crops each season; flavor good; not so high as yellow Antwerp.

Recommended for further trial.

Fastolff.—Mr. Leslie, of Toronto,—a strong grower; not very hardy; occasionally bears heavy crops; berry large; flavor very good. Mr. Arnold, of Paris,—is very tender, produced a small crop; fruit very soft; can hardly be gathered without bruising. Mr. Freed, of Hamilton,—cane and fruit very tender.

Knevett's Giant.—Mr. Holton, of Hamilton,—I have had it three years on a poor, light soil; canes very strong; tolerably hardy; not quite as hardy as Franconia. Good bearer; berries very large and continue in use a long time; flavor best; the flesh hardly firm enough to carry well to market.

Recommended for further trial.

The following resolutions were passed:

Moved by Mr. Arnold, of Paris, and seconded by Mr. Freed, of Hamilton,—That the *Canadian Agriculturist* is worthy of the support of this Association and of Canadians generally, and that it is our privilege as fruit growers and our duty to send communications for publication in its columns.

Moved by Mr. Smith, of Grimsby, and seconded by Mr. Beadle, of St. Catharines,—That an abstract of the proceedings of this meeting be sent to the *Canadian Agriculturist* for publication.

Moved by Mr. Beadle, of St. Catharines, and seconded by Dr. Cragie, of Hamilton,—That instead of the next meeting being held at the time of the Provincial Show, there be two meetings during the season, the first at Hamilton on the day of the July show of the Horticultural Society, and the second at Toronto on the day of the September Show of the Horticultural Society, and that the Secretary give at least ten days notice of these meetings by circular to each member.

The next annual meeting of the Association to be held in the Mechanics' Institute, at Hamilton, to commence on the third Wednesday in January, 1862, at 12 o'clock.

On the Planting and Taking Care of Fruit Trees.

Editors Agriculturist,—As the time for transplanting trees is drawing on, and as many of your readers, no doubt, contemplate extending their orchards, Iwould suggest the following questions, which although not new contain matter of so much importance to those interested in fruit growing, that they will bear repeating at this season of the year. And if your reader, will give the result of their experience, a mass of information will be elicited that will be worth preserving.

1st. Is it best to head back trees in transplanting, or not? If headed back, how much, and is it best to cut off all, or only part of the branches close to the stem, or to cut off the ends of every limb? And should peach, pear, and apple be treated alike?

2nd. How deep should trees be planted?

3rd. Is mulching or stirring the ground the best preventive against drouth?

4th. What crops, if any, should be planted in a young orchard?

5th. Are trees grown in any particular section of country better, from being acclimated, for transplanting in that section, or are trees, like the seed of grain, potatoes, &c., the better by being brought from a distance?

6th. Will cattle destroy trees? What a question some of you readers will say; yet I am sure that some people think they will not, for I have seen horses, cattle, sheep, and hogs, run among young trees for weeks at a time.

I do not ask these questions for personal information, for my own mind after some twelve years experience is perfectly made up. But in travelling through the country, and seeing so large a percentage of trees dead, or stunted in growth, I have come to the conclusion that these things are not properly understood, or at least not properly cared for.

The following fate of a young orchard, (the type of many,) was related to me by a nurseryman.

Well, Mr. Jones, how are those trees doing that I sold you? I suppose that they are beginning to bear some.

Why no, they aint, they did not do very well.

What was the matter with them, were the trees not good?

Well, yes, I think they were, but the fact is the field I planted them in was sowed down to rye the Fall before, and very many of the trees died; perhaps it was the rye. I then seeded it down to clover, the clover took well, and made fine pasture in the Fall, I then turned my calves in, and thought they could do no harm, but one night the cows broke in too, and between them both I have hardly a tree left.

R. N. Ball.

Niagara, Feb. 15, 1861.

The Dairy.

On Preserving Milk.

By Dr. Lyon Playfair.

Milk consists of caseine, of sugar of milk, and of certain salts dissolved in water, in which, also, are suspended little globules of fat, or butter. These globules are surrounded by a shell or skin, which is supposed to be coagulated caseine. The soluble caseine, being a nitrogenous body, is very apt to run into puterfaction. In summer, it does not do so readily, because, the temperature being elevated, the sugar of milk is converted apparently into grape sugar by the agency of lactic acid, then into alcohol, and the alcohol into acetic acid. These changes are induced by a primary action of oxygen upon the caseine. This action is then imparted to the other constituents, the atoms of which being once set in motion, readily undergo the changes described. The acetic acid being formed by the agency of air on the alcohol, acts upon the soluble caseine and coagulates it, or renders it insoluble. It is thus removed from the action of the oxygen of the air, and may be kept for some time without entering into putrefaction. Such are the changes which milk undergoes in summer; but they are quite different in winter.

In winter the first action is that of oxygen upon the caseine. The temperature is not sufficiently elevated to cause vinous fermentation, as in summer. The decay of the caseine generally passes over to putrefaction—that is, the atoms are transformed more rapidly than they unite with oxygen. A putrid smell now arises.

Good butter cannot be made from milk which has undergone this change. The cause is, that butter always contains a certain quantity of caseine, which it is difficult to remove. When incipient putrefaction has taken place, it cannot be arrested by ordinary means, and imparts itself to the bodies with which it is in contact. It is for this reason that the greatest part of the butter made in winter has a rank putrid taste.

The principal object in view in the preservation of milk in the winter, is to prevent the commencement of this putrefaction. One method has been termed *scalding* the milk, and is generally used in dairies. It consists in heating the milk until the oxygen of the air acts upon the caseine, and forms a pellicle (or skin) on its surface. The milk should then be left to perfect repose. The pellicle excludes the air from the soluble caseine. The partial oxidation by which the pellicle was produced, is effected at too high a temperature to enable the decay to pass into putrefaction. When this operation is skilfully performed, the milk remains quite good for four or five days. But there is a risk of failure in this process, and it is only adapted for small dairies.

The best method, which I have seen used in practice with much success, seems to be, to induce the acetous fermentation in the milk. For this purpose, the cream or milk, being placed in a proper vessel, should be surrounded with hot water. The heat which I find to answer best is from one hundred to one hundred and ten degrees. A cloth may be thrown over the whole to retain the heat, and as the water cools, it should be removed and replenished with hot water of the above temperature. In a few hours the cream acquires the smell and taste of vinegar. The changes which I have described above ensue. In large daries, a portion of this soured cream or milk may be added to fresh cream or milk, which should be kept in a room possessing a temperature of sixty degrees. By adding this soured cream to the fresh milk, we furnish an acid, by which the sugar of milk is converted into grape sugar. The curd then acts upon the grape sugar, and converts it into alcohol. The

latter, by oxidation, becomes acetic acid, and thus the whole mass of milk is rendered sour, the caseine coagulated, and therefore protected from immediate putrefaction. The butter made from such soured milk is quite sweet, and destitute of that rank taste which distinguishes our winter from our summer butter. But if incipient putrefaction has once begun in the milk, all this will be of no avail, because it is communicated to the insoluble caseine. Milk perfectly fresh must therefore be used. Fresh milk soured in this way will last for many days, and give risings of cream for a considerable time. This practice, so far as I am aware, is not a general one, though it is worthy of adoption. In summer, of course, no such operation is requisite, as it is done at a sacrifice of the skimmed milk. One great cause of putrefaction in milk, in the want of absolute cleanliness in the dairy. If a drop of milk fall on the table, it should be dried and washed off with care, for its putrefaction causes the evolution of a putrid gas, and this *imparts* its state of putrefaction to the remainder of the milk.

With respect to making butter, scientific explanations can be of little use to practical men. The theory of churning is very simple. By agitation the globules of butter are broken, and made to unite together in a mass. The introduction of air during the churning, aided by the heat at which the cream or milk is, occasions the formation of lactic or acetic acid, and this coagulates the caseine, and thus assists the separation of the butter. In summer, when the heat prevents the ready coherence of the butter, a quantity of cold spring water thrown in after the buttermilk has formed, often effects the desired end. The temperature is thus depressed, the butter rendered solid and more coherent, while the air contained in the water aids the formation of the acid, and coagulation of the caseine. The only thing, in a scientific point of view, to attend to after the separation of the butter, is to free it from butter-milk or caseine. If the caseine be suffered to remain, putrefaction ensues, and the butter acquires a rank putrid taste. Its separation is, therefore, of the first moment. The cause of the superiority of certain foreign butter, which retains its flavour and taste for a considerable time, is more due to its freedom from caseine than to any mystery in its mode of preparation.—*Trnsactions of Royal Society.*

Selection and Management of Dairy Stock.

The report of the Committee of the Massachusetts Board of Agriculture on Cattle Husbandry contains many valuable ideas, worthy of the attention of all interested in the subject. From that part devoted to Dairy Stock, we select the following paragraphs:

"The general aspect of the dairy animal is thinner, sharper, and more angular than a feeding animal. When selecting dairy cows we should look for a wide chest, small head, wide between the horns and eyes, small muzzle, thin, slim neck, sweeping smoothly into the shoulders, the shoulders at the withers thin, back straight, hips wide, and wide in the pelvis, and deep in flank, ribs a little flat, belly somewhat large, udder large, extending well up behind and forward, her general appearance delicate and feminine; but, after all signs, the best recommendation a dairy cow can present, is a list of long line of ancestors that have been famous for milk. Heifers may come in at two years old, but are enfeebled in health and constitution by the practice, and will not hold out in a dairy to so great an age as those that come in a year older. The best dairy bull should have a broad, short head, horns spreading from the side a little in front, and turning upwards, back straight, a little sharp at the withers, widening backward to the hips, slightly sloping rump, belly large and legs short and fine, tail long and tapering, with a heavy brush of hair at the end.

Much of the profit of a dairy cow depends upon a plentiful supply at all times of rich food. The variation in the quantity of milk they yield, is principally owing to the difference in the nutritive quality of the food they receive. Cows receiving food, poor in alimental matter, fall away in milk. Add to the nutritive properties of their food, and they immediately increase their flow. The quantity of milk then does not depend on giving a particular kind of food, but on giving a quantity equal to the support of natural waste of the body, and leaving a remainder to be converted into milk.

Farmers err very much when they undertake to keep more cattle than they have means to sustain in the best condition, especially in winter. The result is, their cows come out of the stable in winter weak and feeble, and struggle through half the summer before they are in a condition to yield milk in quantity more than equal to paying expenses. Dairy cows should at all times be in good condition. They should receive their food at regular intervals; their milk should be drawn at stated hours, and by quiet, gentle milkmen, and they should be treated at all times with the utmost kindness. In short, every means in the power of the dairy farmer thould be used to insure their tranquility. Harsh treatment exerts a very injurious action on their milk, rendering it less buttery, and more liable to acidity.

Respiration is a species of combustion. At every breath we inhale oxygen of the atmosphere, which unites with and consumes the carbon or fatty matter of the food. When cows are worried and driven too rapidly, they breathe more frequently, inhale more oxygen, and more of the buttery portion of their food is consumed, leaving less to be converted into butyraceous milk. Warmth is a substitute, to a certain ex-

tent, for food. Cows, when warm, and comfortable, will consume proportionately less food, and it is well known to all experienced dairymen, that their cows yield more milk in warm, pleasant days, or when they have the run of a warm, well sheltered pasture, than on cold, rainy days, or when they run in cold, bleak pastures. When cold, they inhale more oxygen; the result is a combustion of more of the carbon or oily part of the food, and less remains to supply the lacteal vessels with rich milk."

Goshen Cheese.

From an article on the manufacture of cheese in the *Ohio Farmer*, we extract the following paragraphs on the celebrated Goshen cheese:

There are towns in rocky, bleak New-England realizing annually more profit from cheeses, whether estimated per acre, per cow, or per pound, than most western towns where the land is far handsomer and apparently more favorable every way for the service of a dairy. We may take, for example, Berkshire Co., Mass., and Litchfield Co., Conn., which lie contiguous to each other, and belong to that broken, rocky, mountainous region which extends northward to the valley of St. Lawrence. We shall encounter facts like the following. The town of Goshen, in extent about nine miles by five, and not less than a third of this a barren rock, or swamp, will exhibit an annual exportation of cheese ranging from a million and a quarter to a million and a half pounds. All this brings, in the best markets, from one to three cents per pound above the price of ordinary western cheese. It ought, however, to be said here, that Goshen being the favorite name in market, so far as this region of country is concerned, (and that probably through the influence of some enterprising cheese merchants of the last generation,) the cheese-makers who reside near the borders yet within the adjacent towns on every side, as Winchester, Torrington, Canaan, Cornwall, and Norfolk, quite generally prefer to sell by way of Goshen, and in this way, swell somewhat the gross amount which passes through the hands of the Goshen merchants, receiving their brand.

There are in this region a considerable number of manufacturers who keep few or no cows themselves, but buy the curds of the neighboring farmers. It is a curious fact, those farmers, or farmers' wives, (for the mistress of the house always "runs the curd,") who know how to get the greatest number of pounds of curd from a given number of quarts of milk, are also those who receive the highest price by the pound for their curds; that is to say, the greater the amount of curd that can be obtained from a given amount of milk, the better will be the curd or the quality of the cheese that is made from it. And this difference in amount, under the management of the various curd-makers, is considerable—enough to astonish those who have no actual acquaintance with the matter. It is said sometimes to equal a fourth of the whole amount.

Flavor—the great point in cheese-making—, is here carefully attended to. The farmers however, contend that there is something unusually delicious in the grasses of these mountainous counties of New-England, from the Sound to the St. Lawrence; especially do they claim a freedom from bitter nauseous weeds in the pastures. But after all, we believe that the delicacy of flavor in these New-England cheeses, is for the greatest part, owing to the scrupulous neatness and nicety with which they are treated throughout the whole process of making, together with a precise, judicious and skilful, but indescribable seasoning of curds. Perhaps we ought to add, as an indirect cause, that the largest and best cheese-makers have this jor their whole business. They do almost nothing else. To this art and its process they devote the study of their lives.

Clouted Devonshire Cream.—The milk being put into tin or earthen pans, of ten or twelve quarts, the evening's milk is placed next morning, the morning's next evening, on iron plates, heated by a small stove, until the whole body of cream is formed on the surface, which being gently examined with the edge of a spoon or ladle, till small air bubbles, denoting the approach of a boiling heat, begin to rise; the pans are then removed, and the cream remaining on the milk till quite cold, is transferred into a churn or open vessel, and moved by hand with a stick about a foot long, and a peel of six inches diameter at the end. The cream before churning is the celebrated Devonshire cream; but the butter from it is found to separate more freely, and sooner coagulate into a mass.

Use of Glass Milk Pans.—L. V. Bierce of Akron, Ohio, has been trying glass milk pans and finds that they are much superior to tin or metal. The milk of the same cow put partly in a tin and partly in a glass milk pan was found to differ greatly in its keeping qualities; the milk in the glass pan retaining its sweetness long after the milk in the tin pan had become sour and thick. The same quality of glass milk pans has been observed by a dairyman in England.

Veterinary.

How to Detect Imperfect Vision, or Blindness, in Horses.

The novice in horse-flesh may have good grounds for suspicion as to the existence of imperfect vision, or blindness, when the horse's ears are in constant and rapid motion, and directed in quick succession to every quarter from whence

the least sound proceeds; his action is also lofty and faltering, and he lifts up his feet and replaces them on the ground as if stepping over some obstacle, when there is actually nothing to impede his free progression. But notwithstanding that these symptoms should be sufficient to create suspicion, there are other causes, besides imperfection of vision, by which the same or similar symptoms would appear in horses. For instance, if a horse, with the most perfect pair of eyes, were led from a dark stable into the blazing sunshine, the sudden contraction of the pupil of his eye would render it impossible for hm for a few seconds to see but very indistinctly; hence would arise the same symptoms of uncertainty in his movements until the pupil becomes steady after the sudden contraction. The dilation and contraction of the horse's eye furnish the principal means of ascertaining whether the blindness exists in one eye or both, as the pupil varies in size, according to the degree of light which is brought to bear upon it. In a dark stable the pupil is expanded, so that a greater proportion of light may fall upon the corner; but if the horse is led to the door of the stable, the pupil will contract, so as to exclude more light than could be endured, and if suddenly exposed to the sun the aperture will be but little closed; therefore the novice should carefully notice these variations in the pupil, whether they contract or expand equally by the increase or decrease of the light, which he may readily perceive by advancing the horse's head to the open door or window of the stable, and backing him again into the darkness until he is satisfied as to the perfection or imperfection of the horse's eyes. But if the horse should be examined in the open air the novice should first notice whether both pupils are of exactly the same size. After this, he should carefully place his hand, so as not to alarm the horse, over each eye, ascertain whether it also dilates; then passing his hand over the other eye, ascertain whether it also dilates to the same extent; and if he should still be uncertain, let him place both hands, at the same time, in the position of shades over *both* the eyes, and he will at once perceive (if his own sight be good) whether they are perfect, and, if not, which of the two is imperfect.

We would suggest to all owners of horses the importance of admitting plenty of light and pure air into their stables, for we are quite satisfied nothing tends more to injure the eyes of a horse, than dark or badly ventilated stables. Every man who keeps horses for the purpose of assisting him in earning his livelihood would be neglecting a very important portion of his business; and gentlemen who keep them as a means of administering to their pleasure would be wanting in gratitude to the noble animals, in not attending to the lighting, draining, and ventilation of their stables; to say nothing of their imperative duty to treat those animals with that kindness and consideration which all true men will acknowledge they richly deserve.

In every town and village in the United Kingdom may be found stables without ventilation, except through the chinks of the doors, and, with very few exceptions, *drainage* is a precaution rarely thought of in connexion with a stable. We have frequently been present at the opening of these miserable dwellings for horses, the first thing on a summer's morning—as we have no doubt many of our readers have also—when the state of the atmosphere has been sufficient to stifle many a man, and quite sufficient of itself to engender a variety of diseases among the half-suffocated occupants. We repeat that there are thousands of stables in which the door is the only aperture for the ingress or egress of air, and even this is, in most instances, closed—both when the horses are at rest, or at work or exercise. Thus they have, while in the stable, or rather "horse-oven" (in very hot weather) to breathe the same air over and over again, inhaling the ammonia which is constantly rising from the interstices of the irregular pavement or mud floor; and this is not only a source of misery to the horse, but by acting most injuriously on his eyes, entails a serious loss to his owner, by decreasing bis value. There are few respectable builders now-a-days, who do not understand the erection of well-ventilated and vastly improved stables; but where owners of horses cannot afford to have their old stables rebuilt, they might, at least, before the hot weather sets in, break out windows to admit light and air, and also, at a very trifling expense, drain the floors, and thus, by keeping the air pure and sweet, neutralize the effects which a stifling and impure atmosphere will sooner or later have upon the horses.—*Irish Agricultural Review.*

The Breeding of Racing Stock.

BY BALLINASLOE.

If any person were to ask me a question as to what kind of a horse would pay him best to breed, I should decidedly say "Racehorses," if he has the knowledge, the means, and the convenience; but without these three essential requisites it would be madness for him to attempt it.

A man may be the best judge of a hunter or any other kind of horse in the world, and own the best of them, and yet know little more of the blood of sires or dams, as regards racehorses, than the man knows about breeding foxhounds, whose attention has been always devoted to bull-dogs or Italian greyhounds. It is true he may get the advice and assistance of some competent person to purchase his stock for him, and if he also succeeds in getting a trusty man accustomed to their entire management, and de-

votes a part of his time to make himself acquainted with the pursuit, he may get on tolerably well, as the breeding of race-horses does not require the long experience that training them does. In the latter pursuit, a man's daily, I may say *hourly* attention is required to watch whether a horse or colt trains on, or falls off in his work. But in breeding, if a certain dam is put with judgment to a certain sire, and she is afterwards properly fed and sheltered, and so that no accident (that can possibly be foreseen) is likely to occur, barring the customary attention, she is no further trouble for many months to come. A watchfulness is requisite about the time she is expected to foal, and perhaps (but not often) some little assistance also, but when the foal is dropped, and a few days old, he and his dam require but the common attention of being supplied with food and water. I may here say, however, that some breeders for the turf give the foal an additional quantity of food over and above the natural supply from the dam, in the shape of cow's milk; this is considered necessary, and no doubt advantageous, in rearing stock that has to run at two years old, in accordance with the present absurd fashion.

The outlay to procure sires and dams must necessarily be heavy; for, though there may be scores of thorough-bred mares to be purchased quite as cheap as common dunghill-bred ones, yet, who would buy their progeny? Mares must either have proved themselves runners, or what is perhaps just as good, be descended frum running blood, the sire the same. There are many mares who could never run in the front rank themselves, yet when put to a proper sire, have produced stock that could comparatively *all* run respectably. Let a mare, though never worth the plates she stands upon as a racer herself, if of fashionable blood, produce a colt that it is found can run; from that time she is a comparative fortune, or at all events a real good income to her owner.

I have used the term *sires* in lieu of *sire* in the items as regards outlay in commencing the pursuit of a turf-breeder. It may be said that a man purchasing—say, about a dozen brood mares, has no occasion for than one sire; nor would he have if his stock were three times the number, so far as the mere propagation of animals is concerned; but it must strike every one that it is next to impossible to collect together a number of mares all possessing similar qualities; some have been "flyers," others a sort of breed that, technically speaking, "could run all night." Then it must be clear that the same sire would not be a proper one for mares of such different qualities. The flyers must have a strain of such blood as Whalebone, for instance, got into the progeny, while the honest "Stayers" would want some of the Velocipede, or such blood, for theirs; and, even with the most judicious crosses of this kind, excellence is not *always* to be attained; but without good sires, good mares, and good judgment, it is next to impossible to produce stock that will distinguish themselves on the turf.

I hardly know a pleasanter mode of turning his money to account and occupying the time of a country gentleman, than breeding stock of any sort—what sort must be, of course, determined by the breeder's taste, and, as I have before stated, by the different appliances and facilities he may have for breeding. All breeding is profitable if properly and liberally carried out: I say *liberally*, for whether a man breeds thorough-bred or cart stock, oxen or sheep, without a liberal system is adopted, neither will answer.

There is one great advantage in breeding race-horses—this is, the very early age at which they can be sold. Colts are mostly bought from breeders as yearlings, and those that are in favor with the sporting world will fetch, in many instances, a hundred guinaes, and fillies seventy, and I do not know of any domestic living animal that will fetch the like price at so early an age. It is true a cart colt may only cost (so far as relates to his sire) a guinea or two—a racing colt will cost, at all events, ten or more, unless a sire or sires are kept by the breeder: but against this we have to keep and feed the cart colt for three years before we can consider them marketable, and then we are fortunate if he turns out worth fifty.

I have said that it would be policy for a breeder to keep more than one sire; but suppose he gives a couple of thousand guineas for two sires, he need not place the loss of the interest of these two thousand guineas to his breeding expenses: his sires may very properly be placed to the profit side of his book, for, independent of their services at home may be reckoned the mares of other breeders that would be sent to them, so that, beyond his services to his owner, a very moderate horse will bring in, say a hundred or a hundred and fifty in the course of the season. Alluding to the character of thorough-bred stock, I have said that "if in favor with the sporting world," they will fetch good prices. But this favor can only be gained by three modes:—first, getting blood on both sides that is in favor with the racing public; secondly, it must be known that they and their dams are liberally and judiciously fed and managed; and thirdly, letting it be publicly known that never, under any circumstances, is one of them tried, or kept back for the owner's use. I would recommend all breeders of racing stock to implicitly keep faith with the public in this respect. Of course, I mean in cases when a man breeds to sell. Breeding race-horses for an owners use, to *run*, is quite a different affair, and one I need not touch upon in this letter.

We will suppose that, among a dozen yearlings a breeder produces, from the opportunities he has of observation, he has one among them

that has every promising quality a yearling could have, as far as regards size, constitution, temper, soundness, and style of going—the temptation is great to keep such a colt back; do this only and your prestige as a breeder and seller of untried stock is gone. In such a case as the one alluded to, it would be quite compatible with keeping his faith with the public, if, at his annual public sale, he were to give a friend the benefit of his opinion as regarded a particular colt among them, because they are open to public competition, and if that friend chooses to outbid the public, nothing can be said against his right to do so. In most things, as well as breeding blood stock, if a man keeps his faith with the public, that public will hold their faith in him; and if a man depends upon public opinion for the value of everything he has to sell, he must be very weak minded indeed if he risks losing its confidence for any flattering advantage, which, after all, may turn out a failure.—*Irish Agricultural Review.*

SAVING HORSES FROM BURNING STABLES.—A correspondent of the *New-York Tribune* recommends:—

"Let the sides or walls of the ground floor of stables, of whatever shape they may be built, consist entirely of doors on rollers on an iron track; the upper floor or hay loft, being supported on brick, stone or iron pillars. Let movable mangers be attached to those pillars. In this way the horses' heads would be towards th doors. If a fire happened the doors could be rolled aside, the mangers lifted up or knocked down, and the horses liberated in a few minutes. Farmers, livery stable and omnibus men would find such a mode of building their stables as cheap as any other. Besides, while such a plan would tend to save life, it would permit a more thorough ventilation and cleansing than can be given to stables built in the present style."

VITALITY IN HORSES.—Some experiments have recently been made in France by persons skilled in the veterinary art, with the view of ascertaining how long horses may live without food in certain contingencies, as for example, being shut up in beseiged places. The following results having been noted: A horse may live for twenty-five days without solid food, and merely drinking water. He may live seventeen days without eating or drinking. He can live only five days when consuming solid food, without drinking. After taking solid aliment for the space of ten days, but with an insufficient quantity of drink, the stomach is worn out. The above facts show the importance of water in the sustenance of the horse, and the desire the animal must feel to be supplied with it. A horse which had been deprived of water for three days drank eleven gallons in the space of three minutes.—*The Bulletin.*

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

Continued from page 89.

TOWNSHIP BRANCHES.

EDWARDSBURGH.—Amount of subscriptions, $68.50; share of public grant, $69.50. Paid in premiums, $108.50; expenses, $27; balance in hand, $2.50.

GREY.

COUNTY SOCIETY.—Amount of subscriptions, $68; balance from previous year, $89.51; balance of Government grant for 1858, $180; deposited by township branches, $225; Government grant, $514.76; sundries, $8.25; total, $1085.52. Paid township branches, $525; premiums at fall show, $227; expenses, $82.86; balance in Treasurer's hands, $250.66.

TOWNSHIP BRANCHES.

DURHAM.—This branch society merged its funds in those of the county society for the year, and has therefore no further proceedings to report.

HOLLAND.—Forty-two members, subscribing one dollar each. No further report of proceedings.

MOUNT FOREST.—Forty-nine members; subscriptions, $57; balance from 1858, $40.18; Government grant, $79; total received, $176.18. Paid in premiums, $75.25; expenses, $21.39; balance in Treasurer's hands, $79.54.

Extracts from Report.

Situated in a part of the country so recently reclaimed from the primeval forest, it cannot be expected that a system of improved husbandry can as yet have been established in this locality; and consequently we occupy a less advantageous position than our more fortunate brethren of the plough in older settlements. But time and perseverance will remove the disparity, and give us the benefit of improved agriculture.

Under present circumstances it would be worse than folly to deceive ourselves, or others, by a practice too common on such occasions as the present, by representing a state of things as really existing, which exist only in imagination or desire. Boasting will not fill

a purse or a granary. Deception or falsehood, however flattering to vanity, seldom or never attain the object sought. We will therefore, adhere strictly to truth, being assured that such a course will ultimately be productive of the greatest amount of good.

We would gladly endorse the opinions so frequently expressed in the public papers, in regard to the abundant crops of the present season, were we convinced that such is the fact; but knowing from experience that the yield of the present crops, like those of other years, fall far short of what is represented, we are reluctantly constrained to confess that although the present crops are on the whole superior to those of last year, yet they are such as will not produce repletion in our exchequer.

The small quantity of fall wheat sown here last season, being nearly worthless from the effects of rust and spring frosts, our remarks will therefore apply to spring wheat only. Probably in a few instances from 25 to 30 bushels per acre has been realized, but it may safely be affirmed that the average does not exceed 15 bushels; and that notwithstanding the favorable appearance of the fields previous to the time of cutting, the quality of a great portion of the grain was not so good as it was generally expected to be. The early sown produced the greatest quantity, and best quality; the late being darker and somewhat injured by the frosts which occurred when the grain was nearly ripe. Fortunately, the greater part being Scotch, or Fife, it was not injured by rust, neither was any other kind of spring wheat affected thereby to any great extent. It is also pleasing to note the absence of insect depredations.

Barley being not much grown here claims less attention than the importance of the crop would seem to deserve. Those who cultivate it have no reason to complain of the yield or quality; indeed there is good reason to believe that it is a remunerative crop, and that farmers would find it profitable to grow it more extensively, being attended with little risk, and not so liable to injury as the wheat crop.

Early sown oats may be considered a fair crop, exceeding 30 bushels per acre; but the late sown were, like the wheat, injured by the summer frosts.

The growing of peas appears to be on the increase in this quarter; the beneficial effects of which will doubtless be apparent, and be duly appreciated. Although the yield, in consequence of the unexhausted state of the soil, producing too great luxuriance of haulm, does not exceed 30 bushels per acre, yet that luxuriance is beneficial in retarding, and preventing the growth of wild grass and weeds, mellowing the soil and in some measure making the crop a substitute for naked fallow. Few in this neighborhood have yet been able to afford much space for fallow, and the difficulty of working it properly among stumps, has deterred many, who are well convinced of its necessity and utility, from putting it in practice. However, great numbers of these unsightly, troublesome, and injurious objects, are fast approaching to that stage of decay that they may be easily removed; and in order to give sufficient time for that work, and for the removal of stones, a naked fallow is indispensible. This accomplished, there will be no excuse for shallow ploughing. The subsoil plough will then be in request, and the dawn of a new era in the agriculture of this locality will have commenced. It is gratifying to know that when the stumps are removed, the soil of this part of the country presents no impediment to deep ploughing, and that those who have adopted the practice, as far as practicable under present circumstances, receive their reward in the comparative abundance and superior quality of their crops.

The scarcity and high price of grain in the spring of last year, and the consequent want of a sufficiency of good seed, experienced by many, has had the effect of causing a greater breadth of land to be sown with turnips; thus unconsciously providing for an unexpected contingency, and wringing some good out of a great amount of evil. That extra crop, supplying in some measure the deficiency of food for stock, occasioned by the failure of the hay, which was so complete that where clover had not been sown the mower's task was as unprofitable as that of shearing a pig.

Although the cows of this locality are considered good milkers, the stock of cattle having been chiefly brought here, or the descendents of those thus brought by persons from the old settlements, who have hewed out a home for themselves in the bush: yet however well suited these cattle have been to the circumstances of the early denizens of the forest, the time has now arrived when their

places should be supplied by superior stock. Will the farmers of the neighborhood become liberal subscribing members of the Mount Forest Society, so as to enable it to purchase a thorough bred animal for the purpose of improving the stock of these townships? Improvement in that particular will assuredly be followed by the same results as the improvement in sheep; the owners of which obtain more than double the price, and in other ways doubling their profits, compared with those who rear inferior stock. The members of this society who own an improved breed, invariably take the prizes at our exhibitions.

The excellent samples of dairy produce exhibited at our last show, were equal, but could not be superior to those of former exhibitions, and it would seem that further excellence is not to be attained, at least in the article of butter. All that appears to be desirable now, is that the products of the dairy should be larger. It would be well if those who devote much of their attention to the dairy would adopt a system of management that will enable them to ascertain with accuracy the quantity made from one or more cows during a given time, so as to arrive at a correct knowledge of the profits of dairy farming, and that they would communicate the result of their observations and experiments with a view to giving it publicity.

We can make as good cheese as any produced in the States, but we do not produce enough to supply even the home demand; consequently we do not enjoy an established reputation for cheese making, and we are thus driven out of our own market. By carefully maintaining the good quality, and increasing the quantity of our dairy productions, we may hope to enrich ourselves and our country, by securing the profits which are now enjoyed by our rival neighbours.

The practice of relying principally upon grain crops, we think unwise and unsafe. Continual cropping, without returning the elements of fertility, will soon exhaust the richest soil. Manure must be procured, and it is better to have a home manufactory for its production, than to purchase it elsewhere. Nothing is better adapted for that purpose than live stock, of which a sufficient number should be kept, as they not only produce the necessary fertilizer, but yield a large additional profit.

Although the difficulty of acquiring an improved breed of cattle still exists, the same is not felt with regard to swine. No person now need keep hogs, having no other good qualities than their wonderful powers of enduring starvation, and an obstinate tenacity of life under the most trying circumstances. An evident improvement has taken place, and as several persons in this neighborhood are in possession of a good breed, we have greater facilities for further improvement. Friend Horning, too, is now a resident in the neighborhood, having lately "crept out of his shell" at Guelph, and has brought with him a numerous progeny of fine well-behaved Berkshires, contented, amiable sort of pigs, which instead of running grunting about and getting into mischief, do nothing but grow, and get fat, upon a moderate supply of nutritious food.

The inconvenience and disadvantages hitherto experienced in the disposal of stock, are happily likely to be removed. In future there will be no necessity for driving cattle to Guelph, a distance of forty or fifty miles or more, and there subjecting them to an unfavorable comparison with the superior animals of that locality, and selling, if sold at all, at a ruinous price, as in addition to the recent frequent visits of buyers, we are in possession of the convenience and advantages of two established fairs in Mount Forest, to be held annually on the third Thursday in May, and the third Thursday in September, when farmers should not neglect to bring their spare stock, so that buyers from a distance may be induced to attend in future, thus establishing, and bringing the fairs into public notice, which cannot fail to be a public benefit.

This part of the country bears evidence that nature has here distributed her favors with no niggard hand. The soil is rich and is beautifully watered with springs, rivulets, brooks and larger streams, producing health, comfort, and convenience to man and beast, forming a natural drainage, which will undoubtedly be made available as general outlets, and will greatly facilitate a complete system of artificial drainage, on which in no small degree depends the permanent improvement of the land and the prosperity of the agriculturist.

St. Vincent.—Amount of subscriptions and public grant, $129. Paid balance due Treasurer from previous year, $13; premiums,

$102.95; expenses, $9.05; balance in hand, $4.

SYDENHAM—Forty-eight members; amount of subscriptions, $48; legislative grant, $88; total received, $137. Paid in premiums, $98. 50; expenses, $26.45; balance in Treasurer's hands, $12.80.

HALDIMAND.

COUNTY SOCIETY – Seventy-one members; amount of subscriptions, $71; public grant, $530.96; total receipts, exclusive of deposits of township societies, $601.96. Paid balance due Treasurer from previous year, $46.50; paid township societies, proportion of public grant, $318.58; premiums, $203.50; expenses, $37.12; balance due Treasurer, $3.74.

Extracts from Secretary's Report.

This society, when first formed in 1843, embraced, as now, a territory of forty by forty-five miles, called the County of Haldimand, the county town, Cayuga. About two-thirds of this county is now under cultivation, (then not more than one-half), the remaining third wood or wild land. The soil consists principally of clay loam. There are some flats or bottoms along the banks of the Grand River, and shores of Lake Erie. Of the portion under cultivation about two-thirds is under grain crops, the other third grass or meadow land.

It is with feelings of regret I am obliged to report the depressed state of our county, and in fact of the whole Province, in consequence of the failure of the crops, being for the last few years so badly afflicted by insects of various kinds. The first that I believe I may call your attention to was the fly or bug in the pea. The first year they appeared they did but slight damage. The second year they were very destructive. The farmers becoming alarmed, resorted to all manner of means to banish the insect—changed their seed from high to low land, or *vice versa*—procured their seed from a distance, with not the least appearance of bug—took every pains to grow the pea without bug, but of no avail; the bug the third year was worse than any previous year. Finding no alternative, we were obliged to abandon raising peas for a few years, and now I am happy to say we have good crops of peas. The cause of the disappearance of the bug not known.

I find by close observation that the fly stings the blossom of the pea. You will perceive, when the pea gets nearly half grown, a small speck in it, which grows as the grain does, becomes a maggot, and then turns into the bug or fly. They remain in the grain all winter, and are still in when sowing. I have seen the sower covered with bugs whilst sowing. They remain about the land until the blossoming of the peas, then commence their ravages in the same way as before. The average yield of peas per acre, if good, is about forty bushels. The best sorts for our soils are the golden vine. I have tried the grass pea, they produce nothing.

The next evil I may mention was the disease or rot among the potato. Appearing first among the white sorts in the sandy soil, but slightly the first year. The second year all potatos in the sand, and part in the clay or flats, were rotten. We again got alarmed, and tried means and experiments by changing seed, soil, mode of culture, but the third year was worse than any former year. It became quite visible that the only alternative was to abandon raising them as much as possible. Doing so had the desired effect, and now we have again good potatos. The best sorts, or those least subject to rot, are the flesh colored or Merinoes. The Merinoes are very productive, but not so good for table use. The average yield, if good, is about three hundred bushels per acre, although I have known five hundred bushels per acre.

Next came the Hessian fly among the fall wheat, attacking the stalks at first joint above the ground destroying many fields altogether; making their appearance first in sandy soil. The red chaff white most prevalent, white flint and goose the least. Our county, I am happy to say, did not suffer as much as some other counties adjoining, on account of not attacking the stalk until the grain began to get a little head, consequently leaving nourishment enough in the stalk to fill and ripen. The cause of our comparative immunity from this pest is not known, it only appeared about two years. The appearance of the insect in its early stages is that of a small maggot, deposited by the fly getting inside of the blade and stinging the joint. The maggots are white at first, as they grow older they turn brown. They suck the nourishment from the stalk and destroy it.

Then last, but not least, the wheat fly or midge in the fall wheat, appearing in the ear or kernel, doing an unlimited amount of damage. Many, very many means and experi-

ments were resorted to in order to prevent their ravages, but all without the least avail.

As far as my experience goes, the first appearance was by observing a small fly of a longish form flying about among the fields of wheat. The best time for seeing them is about sunrise in the morning or about sunset in the evening. At these times I have seen hundreds of thousands, yes millions, flying among the wheat in the month of June ; in fact I have seen them from the month of May until harvest. The time of stinging to do the most harm is when the grain is just beginning to form. You will perceive a small speck in the grain ; its first appearance is white ; when it is full grown it turns brown. I have observed they did not attack some fields until the blossom had nearly fallen off, at those stages very little or no damage was done ; and I observed that the side of the ear next the sun was the worst, and bearded sorts rather worse than others. I also observed at one time, whilst thrashing, on the scaffold, thousands of them lying apparently dead or in a torpid state. During the night a rain fell, which wet the boards ; in the morning they were all alive and trying to get to a dry place. Some were dead where the water stood deep. I put some in a box, and in the month of September, until the frost set in severely, some of them were still living.

Can any of you account for those insects or devise any remedy ?

For my own part I have been experimenting. I perceive that if the fly attack the grain late in June, or when the grain begins to get hard, very little or no harm is done. Therefore, I prepared my ground and sowed in August, hoping by early sowing to get the grain so far advanced, that when the fly did attack it that no damage would be done, thinking they always began to sting about the middle of June, but all of no use, the early sown suffered as much as the later. I then changed my seed, my soil, mode of culture, and in fact turned every thing up side down to banish the pests, but all was of no use, the damage was just as great under one plan as the other. Again, some authors recommend ploughing down, or burning the stubble. Ploughing would stifle them ; burning destroy them. If all and every person would burn their stubble, it might destroy the insect, but if only a few did so all the labor would be lost. Some, again, apply turpentine, which remedy is worse than the disease. I have come to the conclusion that all experiments in the way of changing seed or soil, to prevent or banish the midge, are of no avail. They are scourges sent by Him who is the author and giver of all good. The only thing of any use (as experience has taught us in former crops), is to abandon raising wheat as much as possible for a few years, that they may take their departure.

The average yield of fall wheat for the last three years has not been more than ten bushels per acre, although I am happy to say that the yield in 1859 is better than in 1858.

Spring wheat has been substituted for fall and with most excellent results—very little insect or midge appearing. The proper time of sowing much depends on the season or weather in spring. Robert Wickett, Esq., President of the Branch Agricultural Society in this county, sowed wheat every month in the year but July and December, for an experiment, which resulted as follows :—Fall wheat, sowed first September, and spring wheat sowed first April, were the most productive ; also as free from insect or freeer than any other. The best and most prolific sorts are Fife or golden drop. The Fife least subject to rust. The average yield of spring wheat, when good, has been for two years eighteen bushels per acre ; the quantity to be sown one-and-a-half bushel per acre.

The preparation for spring wheat is as follows : Break up an old meadow in the fall late, sow first April without ploughing again, or after a crop of roots manured, plough in in the fall. By ploughing in the fall you can sow earlier in the spring, as it takes the ground some time to get dry enough to plough.—Ground in no case (or particularly clay soil) should be ploughed wet.

For sowing grass seed—sow after you have finished harrowing ; then go over the seed with a roller, it not only closes the ground on the grass seed but makes a good level bottom for mowing.

I may add here, the Legislature passed an act in 1859 to lend money to municipalities, to enable farmers to purchase seed, &c., to sow their land. The County of Haldimand availed themselves of this opportunity, and purchased seed in accordance with the act, which was of the utmost importance to not only the individual who got the aid, but to the whole county, and to the Province generally.

Oats have not been touched by any insect to do harm. The average yield about thirty bushels per acre. The best and most prolific

sorts are the common Canadian, Poland, and Black, there are some objections to black on account of shedding; they require to be cut a little green; they will ripen in the swath, and not shell. They are the heaviest—will go 38 lbs. Sow about 2½ bushels per acre. Plough in the fall after roots, or very early in spring; sow about 10th May.

Barley—No insect apparently damages this crop. The average yield twenty-five bushels per acre. The best and most productive sort is the two rowed Chevalier. For barley I think the land should be prepared in the following manner: After roots or Indian Corn, manured, plough down in fall; plough or cultivate in spring. Sow two bushels per acre. Sow about the first May generally.

Indian Corn—Suffers from no insect, but subject to frost. The average yield is about forty bushels per acre. The best sorts for our county are the eight rowed yellow and white flint. Preparation for corn: break green sward in fall, that is on the sand or bottom land. If you can plough again in spring, plant in rows three and a-half feet apart each way; plant 28th May. You will then be most likely to escape frost in spring and fall; when your corn is fit, cut it, and remove it from the field; if early you may sow with fall wheat, but I would recommend spring crops. In regard to frost, I may remark that we had a severe frost in June, which killed all corn that was above ground, and also did much damage to fall wheat. I had a field of twenty-five acres of new land, and in a few days after the frost all the low land turned yellow, and of course did not fill. If the ear was not touched it came to maturity.

Roots—Turnips, carrots, mangel, &c.—There being such a small portion of roots raised in this county I can hardly give an estimate. By enquiry I find the proportion of roots to wheat to be as follows: Wheat 8 or 10 bushels per acre, worth $1.25; amount per acre $12 or $14. Roots from one acre 500 bushels, worth 25c., amount to $125, or something near it, and with but a trifle more labor than wheat. The work can be done with cultivators and horse hoes, except thinning and weeding. I would here remark, if the farmers would abandon raising fall wheat as much as possible, and turn their attention to the culture of roots and raising of stock, it would not only be more profitable, but would also tend to banish the midge.

A great deal might be said here in regard to the culture of roots, &c. As there are so many different opinions in regard to this one branch of agriculture, the majority of farmers will exercise their own judgment. But I would advise all farmers to abandon wheat, and raise roots and stock. I think there is no argument in favor of wheat.

Labour of a good farming man ten dollars per month and board, or $18 and board himself. I find, and would recommend every farmer who has 100 acres, to put up a small house in a convenient position, and hire a man by the year to live in it and board himself. Such men are generally more steady, and much less trouble about the house than those who are boarded by the farmer.

Machines and Implements.—On old cleared farms the reaper and mower are a great saving of labour; but where the land is new, stumpy or uneven, they are only an expense. The wheel cultivator is very useful for spring work where you plough in the fall or on summer fallow. Subsoiling has been tried but has not proved very satisfactory. Of ploughs for all soils, the Morley, Nags, and Modeland are used. I think if a farmer only has one plough, the Morley is the best. The iron plough of Grey's patent, imported, is used for matches. Of harrows the common double for old land, with thirty-six teeth or points; for new land the three square, or drag, with eleven or thirteen points.

Fruit—So very little is raised in this county that no estimate can be given; but I am convinced that fruit culture would pay well here in comparison with other counties. I may observe the majority of the farmers are now beginning to cultivate fruit trees.

Stock—Horses are, I believe, as good in the county of Haldimand as almost any county in the Province. The best kinds for carriage or roadsters are a cross between the Black Hawk or Morgan, and the common Canadian. We have some good young horses of the celebrated horse Royal George; also from Grand Exhibition, imported by Mr. Powell of Lewiston. They are all better for this county with a small portion of Canadian. A good carriage or roadster is worth now $150; three years ago the same class of horse was worth $250. The best for draught are the Clyde and Canadian; a good draught horse is worth $125. A good brood mare is worth $150. For a man with one hundred and fifty or two hundred acres of

cleared land, two brood mares are the most profitable stock he can have. Raise foals every second year; by so doing you get showier and better foals; sell them at two years old for $60, this will afford a good profit. I am sorry to add that the Americans are purchasing and taking away some of our best horses as well as cattle and sheep.

Cattle.—In showing good breeds of cattle there is not much competition, for the same reason as in regard to horses—that parties are buying all the best cattle for export. There is, however, some very good stock; the principal breeds in this county are grades. Very little cheese or butter is made here, as the county is new, and stock not much imported; although a cross between the Durham and Canadian are the best for climate, dairy and butcher, or for working oxen. The price of a good yoke of working oxen is about $90. I would here remark that there is too much difference between the price of horses and oxen, for instance a horse worth $120—a yoke of oxen only worth $90—the one horse is no team, and, when unable to work, is useless. A yoke of oxen if good will do as much work on a farm as a pair of horses, and with less feed, and less expense of rigging, no harness; a yoke and bows are worth $5, whilst a set of harness is worth $30. Then again when the oxen have given over work you may beef them, thereby getting full value for them when too old for work, or disabled. Mares are more profitable to farmers than horses for this reason, if disabled in any way, they will do for breeding.

A good milch cow worth $20 will produce 120lbs. of butter in a season, worth 12½c. per pound, amount $15. A cow will eat two tons of hay, provided she has nothing else. Milch cows should have turnips or bran mash during winter, by which means the quantity of hay may be reduced to 1¼ ton.

Sheep.—We have some very good sheep here; the Leicester or long wool are the most profitable stock a farmer can have. For instance sheep in the winter season should be kept in a field where there is old grass, and not penned up in a fold at night, but allowed to run in and out of a shelter as they please. By this means 300lbs. of hay or less will keep a sheep, this sheep will shear 7lbs. of wool, at 25 cents per lb.; amount, $1 75; the carcase is worth $5 more, saying nothing about the lambs or increase. A farm of 150 acres can keep 60 sheep, which would yield him annually, clear of all expenses, $60, besides the increase.

Swine.—Of pigs the number is not great, on the whole, although most every farmer keeps a few. I think there is a mistaken idea about farmers wintering over too many pigs. The cheapest and best pork for family use is made from pigs of say nine months old. Parties should be careful and have their sows served by the boar in December, so as to have pigs in March or first April. Take the pigs away when three weeks old, feed well and kill middle of December. It does not pay to keep pigs for killing for family use over winter; one pig will eat 9 bushels peas or corn, worth $5 62½, besides the expense of fatting, when you can buy pork for $5 per 100lbs. Every farmer should have a few pigs to kill through the summer. The best kinds are the Grass and Berkshire crossed.

Poultry.—Not much looked after; they are all, with a few exceptions, the common dunghill fowl, as well as geese, ducks, and turkeys.

This report is drawn up by a native born Canadian, of 42 years of age, who was reared in the county, and has witnessed all the changes in all the different departments, mercantile as well as agricultural, more particularly the agricultural, because he is an agriculturist himself. Farming 400 acres, 250 of improved land, the remainder wood or wild, I may state for the public information the experience of the last twenty years:

Twenty years ago the County of Haldimand was mostly a wilderness; the Grand River about that time was made navigable; there were dams erected, mills built, for flouring, sawing, and grinding plaster. Previous to that date the nearest flour mill was at Ancaster, a distance of 30 miles from our now county town. We could only travel in winter on account of bad roads, &c.; now we have many mills of mostly all descriptions. The saw mills are a great benefit to many farmers here in the winter season. His teams are employed hauling logs to the mills, and most of us have some timber of our own, which is a great help to us, more particularly when our crops fail. Our lands have depreciated in value for the last five or six years. Land five years ago was worth in most parts of the county sixty dollars per acre, now not more than thirty, a falling off of one half, but

five years ago we could get *two dollars* per bushel for our wheat and other grain in proportion; for a horse $200, yoke of oxen $250; labour was $15 per month and board. Times have changed, I think we may look forward now for better. Our country is becoming cleared up. We have good markets at our doors, have good schools and churches, in fact everything we need except roads.

Agricultural Societies.—This Society was first formed in 1843, when it received from the Governor General a donation of five pounds. It has since maintained its existence, and has received the annual aid under the various parliamentary enactments in the same manner as other county societies.

I believe that if there were no branch societies, but one grand County Society, all subscriptions and Government grants to be received for the one great society, it would be the first in the Province. Elect proper officers—men who will work, put their shoulders to the wheel, and move forward, persevere, unite, and we shall prosper. Where there is union there is strength.

TOWNSHIP SOCIETIES.

Eastern Branch.—This Society, organized in January, 1860, embraced in its limits the townships of Moulton, Sherbrooke, Dunn, and Canboro. It consisted of one hundred members, subscribing $1 each.

Rainham.—Forty-eight members; subscription, $48; balance from previous year, $39 27; share of public grant, $67 96; total received, $155 23. Paid premiums, $122 75; expenses, $29 88; balance on hand, $2 60.

Seneca, Oneida, and Cayuga.—Fifty-three members; amount of subscription, $53; balance from 1858, $1 33; grant, $84 95; seed wheat sold, $24 12; total received, $163 40. Paid premiums, $125 75; expenses, $41 68; balance due treasurer, $4 03. The directors of this society forward some extended and interesting general remarks on the agriculture of the townships, but being to a great extent a repetition of the report from the county, they are not here inserted.

Walpole.—One hundred and fourteen members; subscription, $117; balance from previous year, $56 25; grant, $165 66; total received, $338 91. Paid premiums, $255; expenses, $36; balance in treasurer's hands, $47 91.

Miscellaneous.

God's Plan in Geography.

The physical geographer now claims that the particular arrangement of seas, continents, mountains, and rivers, which earth has received, is the very best that could be given for the purpose to which the earth is destined. As the divine wisdom is manifested in the order and adaptation of the parts of the human body, of animals and of plants, so there is an object in the particular shape the continents have been made to assume. Everything works in harmony with a divine plan, which we claim to be beginning to comprehend.

Change the position of Asia and Europe, and you would have ruin and death. Ireland, now always green, would have the climate of Labrador. Compare the British Isles, Norway and Sweden, with the corresponding latitudes upon our own coasts, and we see the dreadful consequences. Take away the Andes; which arrest the rain-clouds, and South America, that most wonderfully watered continent, would be a desert. Take away the Rocky Mountains, or change their direction to east or west, and we have our own fertile country ruined. Elevate our southern coast so as to change the direction of the Mississippi, and what mischief would ensue!

There is literally a face to nature, as there is a face to man. As we have our circulation of the blood, so there is the circulation of the earth's great heart of fire, the circulation of the waters and the ventilation of the air. We have yet to consider these varied shades of nature in their relations to each other, and to man and animal life. But we are not to stop here. The physical geographer claims that the influences bearing upon the intellect of man can be explained by the peculiar arrangement of the earth's surface. We know that civilization has marched from east to west, from Asia to Europe, and even across the Atlantic to the new world—growing and expanding in its course. We can see what has been developed in Asia and Europe, and many predict something for America.—*Prof. Doremus.*

Editorial Notices &c.

Our Present Volume.—We have much pleasure in being able to announce that the subscriptions for the present volume of the *Agriculturist* are coming in in the most satisfactory manner. We fully anticipate obtaining a much larger circulation this year than ever heretofore.

Back Numbers.—We have abundance of back numbers on hand to enable us to supply orders

from the beginning of the year, having commenced with a larger edition than we have ever before printed.

Our Premiums.—We beg to remind all who are kind enough to act as Agents for the *Agriculturist* of the advantage of making their orders as large as possible before the first of April. Those whose lists are yet small need not be discouraged, and those whose lists are large, should recollect that other agents are pretty energetic as well as themselves. Last April 226 copies obtained the highest prize, and 27 copies the lowest.

The Agriculturist for 1861.

The *Agriculturist* is published semi-monthly, each number consisting of 32 pages, and forming a volume of 768 pages.

The *Agriculturist* is exclusively devoted to Agriculture, Horticulture, and similar subjects. It is the cheapest paper of the kind in North America, and specially adapted to the circumstances of the soil and climate of Canada.

The *Agriculturist* is Post Free.

The terms of subscription are: Half a dollar per annum for single copies; Eleven copies for Five Dollars; Twenty-two copies for Ten Dollars; Thirty-three copies for Fifteen Dollars, &c. Payment always in advance.

CASH PREMIUMS.

As a further reduction in price on the largest orders, the following money premiums will be paid on copies ordered and paid for prior to or on 1st April next, viz:—

To the officer of any Agricultural Society, member of a club, or other person who shall send in the largest list of subscribers, accompanied with the cash, on or before the 1st April next, a money prize will be paid of..	$20
To the person sending the next largest list, a prize of	19
The next largest	18
The next largest	17
The next largest	16
The next largest	15
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Board of Agriculture
Toronto, January 1861.

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THE

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OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, MARCH 1, 1861. No. 5.

Prepare for Spring Work.

The stormy March is come at last,
With wind, and cloud, and changing skies;
I hear the gushing of the blast
That through the snowy valleys flies.

Ah! passing few are they who speak,
Wild, stormy month in praise of thee;
Yet, though thy winds are loud and bleak,
Thou art a welcome month to me.

[*Bryant.*

Yes, March, stormy and changeful as it often is, has a welcome to the farmer, and indeed to all true lovers of nature in this northern hemisphere, as indicating the termination of bleak and gloomy winter, with its frosts and snows, though, in truth, some portions of our Canadian winters are the reverse of gloomy,—and the approach of green and joyous spring; the season of hope and beauty, and full of inspiration of all that is lovely and attractive in the surroundings of daily rural life. What an advantage do the inhabitants of the country possess over those of crowded cities in inhaling a purer atmosphere, and in opportunities of observing the wonderful works of the Creator, as they are manifested in the varied phenomena of the circling year! If there be one occupation in this fallen world of ours better calculated than another, to lift men's minds and hearts to the contemplation and enjoyment of the order, wisdom, and goodness displayed in nature, as indicating the perfections of an all powerful and beneficient Creator, we shall run little risk in pronouncing that occupation to be the farmer's, or the gardener's, whose daily avocations bring him into contact with the ever varying changes of the seasons, and the natural government of God. A thousand pities that so many of our fellow creatures, for want of the necessary mental and moral culture, should live almost wholly insensible to the beauties and blessings by which they are constantly surrounded! With the necessary preparation of mind, the cultivation of a field or garden will naturally induce correct habits of observation, and lay the foundation of knowledge, scientific and moral, which will enlarge the sympathies, refine the taste, and elevate the aspirations of its possessor. It is important that these truths should not be lost sight of by the agricultural press; since there appears to be no means of permanently raising the status of the rural population, as, indeed of all others—but such as are of a moral and intellectual nature.

Our object, however, in the few remarks we intend to make is not so much to moralise,—and the above digression it is hoped will not be deemed out of place,—as to remind our readers of some necessary things which the season at which we have now arrived naturally suggests. It is true that much snow yet remains on the ground, and that cultivation cannot be commenced for, perhaps, some weeks. But that period may arrive earlier than we expect; the snow is now fast wasting,—going off in a most satisfactory manner, and the ground not having in general been deeply frozen before

the first covering of snow, present appearances, after so much severe weather, seem to indicate the probability of an early spring. Whether these anticipations should be realised or not, it is clearly the duty and interest of the farmer to be fully prepared to commence operations as soon as the season will admit. His future plans should now be finally determined, and all kinds of implements repaired and got ready for use. Before the snow is quite gone the necessary amount of rails should be hauled to all such places where the fences require repairing,—a work of indispensible importance, and which will run a great risk of being neglected if not performed before the numerous and pressing duties of spring actually commence. Some people sow clover and grass seeds on the snow, a practice that is, we understand, often found to answer well, though as a general rule we should prefer performing the operation when the surface is dry, immediately after the first warm rains of spring, and to finish with a light harrowing or rolling. Some practical observations on matters of detail will be in time in our next number.

We would now remind the reader of the importance of getting in readiness not only his ploughs, harrows, &c., so that not a single hour be lost when the proper period arrives for commencing cultivation, but also his seed grain of every description. More timely attention, we understand, is now given to these matters than formerly, but so much depends on the prompt manner of doing these things that it can never be considered superfluous to remind farmers of them. We strongly urge them *to select the purest and best quality of seed*, whether of spring grain, grasses, or roots, that they can possibly command. Sufficient attention is very rarely paid to these matters ; and the consequence is that much loss is sustained, and the general character of our produce lowered. A perfect cure, perhaps, will only be found in keeping the different species and varieties of grain absolutely distinct, either in ricks or separate departments of a building, so that no intermixture can take place. The present system of housing all kinds in barns loudly calls for reform.

Those farmers who have a stock of turnips, mangels, &c., on hand will now appreciate their value. During this and the succeeding month they may be most advantageously fed to cattle and horses ; and especially to cows and breeding ewes, that a full supply of milk may be obtained for their young. All kinds of roots now in store, whether in or out of doors, should be turned over and examined ; picking out such as are decomposed or decomposing, and letting in air to sweeten the mass and prevent vegetation. Potatoes should be carefully picked over, and such as appear most suitable for seed laid by themselves, taking pains that the selections are pure, that is, unmixed. Roots of all kinds are peculiarly liable by the increasing temperature of the air and their own tendency to ferment, to deteriorate rapidly at this season, by sprouting, unless the above precautions are strictly and timely observed.

Yeaning ewes will now require the best attention, they should be separated from the rest of the flock, kept in a dry, sheltered, but well *ventilated* place, for nothing is so injurious to sheep as a damp and close situation. A small quantity of roots and a little corn, barley, or other meal, regularly given, with good hay and pea straw, and plenty of dry litter. In the middle of the day when warm and dry, ewes should be allowed to go into the open air, in yards, or the sheltered corner of a field, for exercise, but the young lambs should not accompany them, unless under peculiarly favorable circumstances, in regard to warmth and dryness. All exposure to changes of temperature, particularly when accompanied by dampness, is particularly injurious to lambs, and is not unfrequently followed by fatal results. While the ewes are out, the lambs may be gradually brought to eat some finely chopped hay or meal, given in shallow troughs, which will tend to strengthen them, and imrove their condition.

Notwithstanding the severity of the winter now drawing to a close, and the large amount of snow that has fallen, and which has in many places stopped all kinds of travel for several days, we hope from all we hear, that live stock will come out in spring in quite as good condition generally as could have been expected. The supply of hay was not great, but the extension of root culture has already in some measure met a deficiency from that source ; and to the raising of increased crops of the Swedish turnip, mangels, carrots and parsnips, we must mainly look for sustaining our increased herds and flocks in a healthy and thrifty

condition. Every farmer should have under cultivation more or less of these crops, which are now become an absolute necessity in any system of farm improvement. The relation between stock, grain and roots is every day becoming more apparent and important; constituting as it does, in connection with thorough culture and drainage, the soul of modern husbandry.

Salt and Lime.

Since writing the remarks on salt in reference to the enquiry of a correspondent on another page, we observe from an American exchange that that article is sometimes profitably applied in the States to field crops, particularly old mowing or pasture lots, where the grass is, as it is termed, "running out." The quantity sown broad cast in its crude states, varies considerably, from three or four to as much as twenty bushels per acre. It is said to be effectual in killing worms and insects, when applied in large doses; that is at the rate of twelve or sixteen bushels to the acre. Thus applied it will kill weeds on garden walks, and on asparagus beds, and the asparagus itself will be benefitted. Some care however is necessary in applying it to growing crops, for if used in too large quantities it will injure or destroy them. We remember many years ago seeing a strong solution of salt applied to pasture land, in Englnd, which apparently destroyed the vegetation through the summer, the surface appearing perfectly brown as in a severe drought, but the rains of autumn awakened up the grass, which soon put on its usual green livery and grew luxuriantly; and both cattle and sheep preferred that part of the field, which had been salted, to any other for a year or two afterwards. In Upper Canada, which is considerably removed from the direct action of oceanic influence, it is reasonable to infer, that the action of salt will be found more powerful than in situations lying contiguous to the sea.

We notice in a recent report of an English Agricultural Society, that one of the members had been in the habit of dressing land intended to be sown with wheat in the fall, with a manure made of a ton of lime to half a ton of salt, well mixed together some weeks before it was used. He had applied it after summer fallow for a long period with marked and invariable success. Whenever he was afraid of a crop of wheat going down, he always applied this dressing, which had always secured a good crop of clover; generally ploughed the land, and then applied the manure to the surface. The lime and salt should be mixed some time before they are used, for the more completely they amalgamate the better. The mixture stiffens the straw, and prevents it going down by heavy rains, while it increases the quantity and improves the quality of the grain.

Preparation of a new Artificial Manure.

We find in a recent number of the "*Journal de la Societe Centrale d' Agriculture de Belgique,*" the details of manufacturing a very powerful artificial fertiliser, from which we condense the following facts for the benefit of our readers. The experiment was made on the property of M. De Bryas of Saint Florent, in Belgium, and the result is said to have far exceeded his expectations. He threw into a pit containing about 2000 hectoliters, and which communicated with another pit capable of holding 500 hectoliters, a dozen of dead animals, horses, oxen, &c.; two or three thousand oilcakes, a quantity of concentrated sulphuric acid, and 400 kilogrammes of vitriol of iron. This having been well mixed up, and then allowed to lie, formed so powerful a manure, that by using 300 hectoliters of it to manure a hectare of land, a very rich crop has been produced, although it had not been manured for three years.

Subsequent experiments appear to demonstrate that this artificial manure will extend over a surface eight or nine times greater than the same quantity of ordinary stable manure would; and the effects produced on vegetation are far more important. In all large cities the amount of fertilising matter that can readily be obtained from dead horses, and other animal substances, is considerable, which is too often allowed to run to waste and occasion much annoyance and positive mischief, instead of, as it should do, go to the increase of garden and field crops.

One of the tunnels on the Baltimore and Ohio railroad is lined throughout with cast iron, and lighted with gas.

Botanical Society of Canada.

Abstract of recent Discoveries in Botany and the Chemistry of Plants. By Professor Lawson.

SEA-WEED AS A MANURE.

The attention of the English farmer has been recently called to the use of the sea-weed as a manure. This material is thrown up in enormous quantities on the shores of Britain, and on the east coast of Scotland it is extensively employed to fertilize sand dunes that would otherwise be worthless. In dry sandy soils it acts in two ways; first, by directly contributing food materials to the crop, and secondly, by the hygroscopic action of the mucilaginous tissues in maintaining a certain degree of humidity in the arid soil, a result that is no doubt aided by the presence of the sea salt accompanying the weed. The richness of the ash of the common sea-weed in potash, soda, phosphates, and other materials of plant growth, shows that it has a high manurial value. In Greenland specimens, the ash has been found to contain ten per cent of phosphates. The proportion of water in the recent weed is so large, however, that sea-weed cannot be profitably carried to great distances, but along the shores of the lower St. Lawrence and in the other maritime provinces, where it can be readily obtained at certain seasons, its value can scarcely be overrated. The process that have been suggested for converting the sea-weed into a paste for transport, mixing with peat ashes, &c., do not seem likely to lead to any useful result, so far as the British American provinces are concerned.

"STEEPS" FOR SEEDS.

Of the many "steeps" that have been recommended to facilitate the germination of seeds, the most intelligible is that of caustic potash, or carbonate of potash, applied by M. Andre Leroy to seeds naturally protected by fatty or oily pulp. He reports that the seeds of Hollies, Magnolias, Yews, and the like, which often lie dormant in the ground for a couple of years, come up readily after treatment with potash and subsequent rubbing with sand.

BLANCHING OF FLOWERS.

It is well known that light is as necessary to plants as a due supply of heat and moisture. The effects of its absence are often singular. We know that plants grown in darkness do not exhibit their usual healthy green color, light being required for the development of chlorophyll. Advantage is taken of this circumstance in the blanching of salads and vegetables, and the same process is now being applied to flowers. It appears that in Paris there is a great demand for white lilacs for ladies' bouquets in winter, and as the common white lialac does not force well the purple "Lilas de Morly" is used. The flowers of this variety, when made to expand at a high temperature, in total darkness, are of a pure white; those of the Persian lilac will not whiten.

PAPER MATERIALS.

The cry for "more rags" which papermakers raised some years ago, necessarily failed to increase the supply of rags, but it served to bring materials to the paper-mill that had not been previously thought of. Hollyhock stems and straw and heather, and a hundred other substances, were tried and found suitable in various degrees. Many of these, while capable of being converted into paper, could not be profitably used in the manufacture; but several have taken their place as really important sources of paper fibre. Plants that require to be cultivated exclusively for this purpose are not likely to yield satisfactory results, and of late years, therefore, attention has been especially directed to the waste products of agriculture. In all agricultural plants woody fibre is produced to a greater or less extent, and that of the straw of cereal grains has been used for a number of years to a considerable extent. The leaves and husks of Indian corn (*Zea Maize*) are also coming into extensive use, as appears from interesting details published by Professor Lindley in the Gardeners' Chronicle. Dr. Lindley's account of the manufacture appears to be founded upon statements that have appeared in the *Breslaur Gewerbeblatt* and the Daily Telegraph, a London paper. The following extracts will be of interest on this side of the Atlantic, where Indian Corn is produced in such enormous quantities:—

"Recent experiments have proved Indian Corn to possess not only all the qualities necessary to make a good article, but to be in many respects superior to rags. The discovery to which we allude is a complete success, and may be exected to exercise the greatest influence upon the price of paper. Indian Corn, in countries of a certain degree of temperature, can be easily cultivated to a degree more than sufficient to satisfy the utmost demands of the paper market. Besides, as rags are likely to fall in price, owing to the extensive supply resulting from this new element the world of writers and readers would seem to have a brighter future before it than the boldest fancy would have imagined a short time ago. This is not the first time that paper has been manufactured from the blade of Indian corn; but, strange to say, the art was lost, and required to be discovered anew. As early as the seventeenth century, an Indian Corn paper manufactory was in full operation in the town of Rievi, in Italy, and enjoyed a world-wide reputation at the time; but with the death of its proprietor the secret seemed to have lapsed into oblivion. Attempts subsequently made to continue the manufacture were baffled by the difficulty of removing the flint and resinous and glutinous matter contained in the blade. The

recovery of the process has at last been effected and is due to the cleaverness of one Herr Moritz Diamant, a Jewish writing-master in Austria, and a trial of his method on a grand scale, which was made at the Imperial manufactory at Schlogelmuhle, near Glognitz (Lower Austria), has completely demonstrated the certainty of the invention. Although the machinery, arranged as it was for the manufacture of rag paper, could not of course fully answer the requirements of Herr Diamant, the results of the essay were wonderfully favorable. The article produced was of a purity of texture and whiteness of color that left nothing to be desired; and this is all the more valuable for the difficulty usually experienced in the removal of impurities from rags. The proprietor of the invention is Count Carl Octavio Zu Lippe Weissenfeld, and several experiments give the following results:—

"1. It is not only possible to produce every variety of paper from the blades of the Indian Corn, but the product is equal, and in some respects even superior, to the article manufactured from rags.

"2. The paper requires but very little size to render it fit for writing purposes, as the pulp naturally contains a large proportion of that necessary ingredient, which can at the same time be easily eliminated if desirable.

"3. The bleaching is effected by an extraordinarily rapid and facile process, and, indeed, for the common light colored packing paper the process becomes entirely unnecessary.

"4. The Indian Corn paper possesses greater strength and tenacity than rag paper, without the drawback of brittleness so conspicuous in the common straw products.

"5. No machinery being required in the manufacture of this paper for the purpose of tearing up of the raw material and reducing it to pulp, the expense, both in point of power and time, is far less than is necessary for the production of rag paper.

"Count Lippe having put himself in communication with the Austrian Government, an Imperial manufactory for Indian Corn paper (*maishalm papier*, as the inventor calls it) is now in course of construction at Pesth, the capital of the greatest Indian Corn growing country in Europe. Another manufactory is already in full operation in Switzerland; and preparations are being made on the coast of the Mediterranean for the production and exportation on a large scale of the pulp of this new material."

Advertised Cattle Foods.

The following is taken from a very instructive and interesting little book, entitled *Scientific Farming Made Easy, by* T. C. Fletcher, just published by Routledge. It is the ordinary formula for making a ton of the most extensively advertised of these foods, one or two of which have been exported to Canada, and are puffed up for sale here. Few indeed of our farmers, we should think, are likely to be deeply bitten.

				Wholesale cost price.
Carob (locust) bean, finely ground	at 6*l.*	per ton	cwt. qr. lbs. 6 0 0	£ s. d. 1 16 0
Indian Corn	at 7*l.*	"	9 0 0	3 3 0
Linseed cake	at 10*l.*	"	3 0 0	1 10 0
Powdered Tumeric	at 6d.	per lb.	0 0 40	1 0 0
Sulphur	at 1½d.	"	6 0 40	0 5 0
Saltpetre	at 4½d.	"	0 0 20	0 7 6
Liquorice	at 10d.	"	0 0 27	1 2 6
Ginger	at 6d.	"	0 0 3	1 6 0
Aniseed	at 8d.	"	0 0 4	0 2 8
Coriander	at 8d.	"	0 0 10	0 6 8
Gentian	at 7d.	"	0 0 10	0 5 10
Cream Tartar	at 1s. 3d	"	0 0 2	0 2 6
Carbonate of Soda	at 4d.	"	0 0 6	0 2 0
Levigated Antimony	at 6d.	"	0 0 6	0 3 0
Common Salt	at ¼d.	"	0 0 30	0 0 8
Peruvian Bark	at 3s.	"	0 0 4	0 12 0
Fenugreek (trefoil)	at 7d.	"	0 0 22	0 12 10
Total			20 0 0	11 13 8

The above articles are put down at the ordinary wholesale market price, but if purchased in large quantities, might be got much cheaper. The use of the best linseed cake is also assumed, when it is by no means improbable an inferior description is often used. However, be this as it may, a profit of 200 per cent. ought to afford the use of none but the best articles. Independently of the slight colouring with tumeric and flavouring with liquorice, coriander, aniseed, &c., and the medical compounds as before set forth, the main bulk of these manufactured foods is composed of the carob bean, Indian corn, and linseed cake. These form nine-tenths of its substance; and it is worthy of note, that of these, by far the most valuable, in point of both price and feeding quality, is linseed cake, and this is used in the smallest proportion. If, however, the farmer chooses to pay three or four times as much as the intrinsic value of an article, it is, of course, at his option to do so; but, inasmuch as the main object of farming is a remunerative profit, it passes my comprehension to understand how that object can be gained by feeding animals on substances that cost from £40 to £50 per ton.

The above ingredients, throwing aside all the medical and flavouring compounds, give, upon analysis, the following results:—

Water	13·01
* Nitrogenous (or flesh-forming substances)	14·97
Fatty matter	5·78
Starch, sugar, &c.	54·40
Indigestible woody fibre	6·25
Mineral matter, ash	5·59
	100·00
* Equal to nitrogen	2·36

Such a mixture as the one represented by the foregoing analysis could be made by a mixture

of barley meal, beans, and oil-cake at less than one-fourth of the price charged for the beforementioned cattle food. As to the stimulating properties contained in these foods, I am inclined to think their constant use is very questionable, and very likely to be productive of harm.

Practical Expense and Results of Tile Draining in Canada.

COMMUNICATED BY HENRY J. BOULTON, OF HUMBERFORD.

EDITORS AGRICULTURIST,—The report condensed for the columns of your publication of the 16th January, from an address by Mr. Dunlop, of East Zorra, evinces an active interest in that locality in a subject which deserves a general and constant attention, far beyond that which our farmers have as yet bestowed upon it. Why is it that of the many settlers among us, who in the old countries have experienced, or at least witnessed, the immense benefits derived from the underdraining of farm lands, so few come forward here to apply the practice on their own account, publicly to recommend it to their neighbours, and strenuously to aid and assist in procuring the adoption of such legislative measures as would remove the physical difficulties which impede it through want of general arterial open drainage, and would facilitate the introduction and distribution of capital, without which few, if any, of our agriculturists, can proceed in the work upon any large scale. It is now some two or three years since the matter was first submitted to public discussion, and though some progress has been made, still the steps in advance have been very slow and halting. Very few have dared the experiment, and these have failed to give publicity to their success. As it is only by the example of tangible results that a practical science, such as agriculture, can be improved or taught, all those engaged in this pursuit should not fail to make known such facts, occurring within their own experience, as may establish the benefit and practicability of any improvement sought to be introduced.

As in your paper all subjects of this nature receive careful and useful attention, no farmer in the country should be without a copy, and all should endeavour, by their own contributions, both in the way of statement of facts, and of explaining the rationale of different appliances of cultivation found to be beneficial.

As to the utility of thorough drainage of land, nothing would bring it home more forcibly to the minds of the farming community than a constant report being sent in by individuals, and published by you, of the extent, be it ever so small, to which it has been applied, and the practical results which have been observed to flow from it, not forgetting the actual expense of the work. I would therefore call upon every farmer to furnish a statement of this kind, whether it be for publication or to enable the Editors of the *Agriculturist* to report from time to time the actual progress made in this most important work. As more is done and more is known, the examples previously given will be oftener and more confidently followed. To this end I wish to submit a statement of my own operations:

My first performance in this line was in the autumn of 1849, in the first wheat field which I ever sowed, when I laid about 90 rods of drains in about 10 acres of land, though the lowest parts of the field with chestnut staves placed in the form of an inverted V upon a pine slab, thus . These drains, at an average depth of 30 inches, cost me 20 cents per rod, material and all, and are yet in very good order, though the land lay so low that I was obliged to draw the water up from the outlet all the way along the bottom of the digging, and the river into which they discharge is generally above the mouth of the drain, which is only kept clear by the force of the water in the soil above compelling it to boil out.

This was the first effort of a book farmer, and although the seed was sown upon an old worn out field, at an expense in pulling stumps, manuring, liming and draining, which would have frightened many an older hand, the crop repaid the outlay with a good return of increase, fully one-third of the crop having been saved by the drains. I wish all my farming operations had been continued as I began; but after this I followed in the track which so many have pursued before and since, of planting many acres of grain in an insufficient manner, and in many cases barely receiving back my seed. The farm which I worked upon was certainly in bad order; no well seeded grass fields; no good fences; plenty of stumps, and no buildings. However, after gaining a little experience, and getting about 120 acres into pretty fair order, I rented out this farm, and in 1854 removed to another worse, where I now reside. Here while diversifying my employments by dabbling for three or four years in mill-dams, saw-mills and grist-mills, thus extending my general information, but adding to the numerous body of those who having too many irons in the fire suffer accordingly, I again went through the ordeal of fencing, building, stump pulling and seeding, and again about 1856 began a few experiments in underdraining. At first I had recourse to my old acquaintance, the slab drain; then I made a bold move and bought one or two loads of horse shoe tiles, then a few pipes, laying in this way in small quantities and detached spots some four or five thousand tiles, or between two and three hundred rods. The labour of these alone cost me about 25 cents a rod, neither my men nor myself understanding the proper way to proceed. In 1858 I visited England, and having had opportunities of examining into these matters, I returned with some

solid information on the subject. During the following winter about one hundred rods of trunk drains and secondary main drains of six inch and four inch square wooden boxs, were laid in a swamp of about eight acres, the soil of which was pure peat. These drains were subsequently to receive the water flowing from lands embracing, with the swamp through which they pass, about twenty-five acres. This water is thus collected into one box drain, six inches square, which will probably have to be replaced some day with tile pipes. During the winter I purchased and drew home 40,000 2 inch and 1½ pipes, and 4000 3 inch. The two former at $7.50 per M., the latter at $12.50. Now I was ready to commence operations with some effect, and I have little doubt that any farmer who once commences draining will never rest satisfied till every acre under his control which requires it has been so treated. The frost had not entirely disappeared in the spring of 1859, when I broke ground in a five acre piece of sandy bog lying below my barn on a slope of land resting upon a clay bottom, which almost cut off all communication with the portion of my farm beyond. This was excellent schooling ground, and I came out of this field at the end of about three weeks work, a pretty accomplished drainer, for a more difficult piece of ground could hardly be imagined. After many failures however, and reverses, the springs were caught and led captive down to the main drain, whence they are allowed to escape over the brow of a hill as pure and as musical as silver bells. After a late crop of peas, this ground, with the remainder of the field, a light sandy soil, in all ten acres, was rather roughly sown with fall wheat, and this year gave twenty bushels per acre, the bulk of the crop coming from the drained ground. The total cost, including tiles, of laying 250 rods of drains having been $187, or 75 cents per rod. This was certainly a great expense, but it was owing in a great measure to the work having been done so early in the spring when the land was full of water, and the earth therefore constantly fell in before the pipes were laid, and after getting through the clay to the lighter soil higher up the slope, which was a regular quick sand, the pipes were repeatedly filled up and had to be lifted and relaid until at last I drew off the main body of water by running a brush drain under the hill across the slope, and then ran my pipe drains up the slope to the brush drain. The latter was ultimately choked with the quick sand, but the water now runs down the pipes, and the land is now laid perfectly dry where formerly an ox could hardly flounder through. In land of this description I found, after numerous misfortunes, that the only way of securing the drain was by laying a narrow slat or board at the bottom on which to rest the pipes, which should be laid and immediately covered with fresh clay as soon as any portion of the trench was opened. I could now do the same work for $100, or 40 cents per rod, as the labour, from want of experience on the part both of myself and my men, cost twice as much as it ought to have done, and a great deal of it had to be done twice. The tiles can also be now had for 25 per cent. less than I then paid.

My next experience was upon 7¾ acres of clay, lying on a hard grey limestone clay subsoil In this I laid 646 rods of drains—main drain at 20 cents per rod; branch at 17c., in all $108.70; sundries, as carting tiles or laying do., and seven days extra work, $44.85; 150 4 inch tiles, $3.75; 5,000 2 inch, $40; 5,000 1½ inch $35; 1,000 3 inch, $12.50, in all $244.80. By this expenditure upon an old clay field, which by constant cropping had fallen into the hardened baked condition usual after a series of years with such soils, I was enabled to raise without manure 3,664 bushels of mangel wurzel and carrots, the cultivation and harvesting of which cost $5.25 per hundred bushels.

During the remainder of the spring I laid about 573 rods more in different parts of my farm, at an expense of all labour and materials, except tiles, of $116.64. In December, 1859, I commenced upon another clay field, which had been ploughed into 33 feet lands for the purpose during the previous autumn, and by the 8th February, 1860, the men had laid 498 rods at a cost of $84.86. Since this I have laid a few more on my own farm, and my account for drainage on my own land stands thus:

44,000 tiles	$372.00
Teaming and distributing tiles at $2 per M	88.00
5,000 feet lumber for box drains at $8	40.00
Sundry expenses, carting clay, laying tiles, and strips or slats for bottom	84.66
530 rods digging and filling p. day.	255.06
1923 " " per rod.	311.80
2453 rods, nearly 7¾ miles	$1151.52

These drains average full four feet deep. A portion of one outfall was fifteen feet deep, of another eleven, of two others eight. All of these heavy diggings were done by days work, as well as all my first schooling operations, and this of course will account for the enormous difference between the expenses of the day work and of the piece work. In doing the latter, through greater skill on their own part and the work being better laid out and directed by myself, the men made better wages than when working by the day, in some cases as high as $1.12 per day—the average being about 87 cents.

In addition to the above I have superintended the laying of 30,000 tiles elsewhere; 25,000 of which were laid in a field in Mrs. Forlong's property at Gore Vale, immediately in rear of Trinity College, Queen Street, Toronto, between

2nd March and 17th April. This work was all done by the piece, except carting and laying the tiles, and as I consider it a thorough specimen of the manner in which such work may be done economically to the land owner, and affording a full remuneration to the labourer, I subjoin a more particular account. The field lies very advantageously for draining, having plenty of slope and, except in one or two places, no veins of sand were found to impede the work. Nearly the whole of the land was of a very stiff clay, the upper portion of it especially, nearly eighteen inches of the bottom having occasionally to be removed with a pick axe, so that I allowed the men to run the upper third of some of the hardest of the drains only from 42 to 45 inches deep, the remainder of the branch drains being four feet, and the main drains 4 feet 6 in., and 5 feet deep. The land drained consisted of 15 acres, embracing a garden and orchard $1\frac{1}{4}$ acres, and a field containing $13\frac{3}{4}$ acres, which had been ploughed into nine pace lands the previous autumn. This was rather closer than necessary perhaps, but no disadvantage. The work was commenced on the 2nd of March, the ground being quite solid with frost every where except in the open furrow. These were broken into without much difficulty and the tiles laid therein.

The total cost was as follows:

1279	rods digging and filling at 10d. cy.			$213.17
141	"	"	at 1s. 0d.	28.20
$12\frac{3}{4}$	"	"	at 1s. 3d.	3.18
5200	$1\frac{1}{2}$ inch tiles at		$6.00	31.20
17780	2 "	"	6.50	115.57
1920	3 "	"	12.00	23.04
250	4 "	"	20.00	5.00
330	5 "	"	30.00	9.90
$26\frac{3}{4}$	days labour laying tiles at 75c.			20.06
6	days extra work			4.20
Tools—wear and tear and repair				12.25
Carting tiles from Yorkville, four miles, and distributing				48.30
1433	rods, say $4\frac{1}{2}$ miles, at say $114.12 per mile			$514.07

$34.27 for $95\frac{1}{2}$ rods per acre.

About twenty different men were employed, and of these only three had done any work of the kind before, yet in doing 1163 rods at 10d.; 101 rods at 1s., and 13 rods at 1s. 3d., eight gangs of men earned by 303 days work, 59, 62, 67, 70, 77, 79, 84, and 87 cents per day respectively for each man in each gang. At the latter part of the work, several of the men earned a little over a dollar per day, averaging six rods per day.

This ground, with the rest of the farm, was rented on shares, and was planted with potatoes. The upper part of the field yielded at the rate of 210 bushels per acre, but the lower part, though naturally the richest land, from being encumbered with some very heavy elm and other trees, did not yield nearly so well. The crop moreover, was carelessly cultivated, not having been worked amongst between the last harrowing, after the potatoes came through the ground and their being earthed up with the plough, which too was done when they were in blossom. A very different yield would have been the result of proper attention between those periods. It is the ease and satisfaction one experiences in the capability of thorough and deep cultivation of land, at all times after draining, that makes this treatment especially profitable, particularly in the case of clay land, which thus becomes not only dry but thoroughly aerated, whereby it is, as it were, decomposed through the action of the atmosphere admitted into it, the soil being found at all times and seasons in a mild, friable condition, well fitted for the germination and growth of any seed or plant, be it naturally ever so tender and delicate when young or at any after period.

As to the results of drainage on my own land I have been disappointed in one particular, which I will remark upon presently, but in which I was certainly over sanguine. In every other respect however, it has been eminently successful. I have been enabled to commence work upon my land of all qualities and in all situations, high and low, clay and sand together, the moment the frost left the ground, in fact one field I harrowed before the frost was entirely out. Upon all I have set my ploughs and other implements to work whenever it was not absolutely raining, whether it was upon clay or sand, heights or hollows. This alone will be recognized as an immense advantage. No water is ever seen on the surface of any of my land, though I only limit the width of my feerings generally twenty paces, for the convenience of turning on the headland, and in no case do I draw a water furrow across the field or open any between the lands after seeding. I have also grown large crops of swedes, mangolds and carrots on clay lands formerly so stiff that potatoes could hardly break through the crust, and on low parts of sandy fields where formerly Indian Corn seed would rot in the month of June, and turnips would attain but a sickly growth though sown near July, and water weeds of the most noxious description would choke out the stronger grain crops, I have grown very large swedes, and spring wheat with straw $4\frac{1}{2}$ feet high, of the clearest and brightest yellow hue and of almost flinty hardness, not a particle being laid though of such vigorous growth. Of the results upon the growth of fall wheat I have spoken above. This was grown upon land which to the present day has been ploughed but twice—once for the peas after draining, and once after harvest, preparatory to sowing the fall wheat seed; and though this portion of the field was of a sandy, mucky description, and the straw was six feet high, not a

rod square was laid or any portion of it struck with rust. The yield of the drained ground was no doubt at least 25 bushels per acre—the remainder of the field being a light, dry, rather sterile sand, and thickly studded with heavy pine stumps—yet the average of ten acres was twenty bushels. I will now dwell upon my disappointments: I did think that by this means the midge could be successfully met, but I have found that in the case of spring wheat the evil was rather aggravated. Depending upon drainage as a thorough cure, I paid no attention to the times and seasons, but sowed last spring 48 acres of spring wheat, golden drop and other varieties, between the 31st March and 18th April. This crop, though the straw was enormous, was entirely destroyed by the midge, which was in full strength at the moment the blossom was formed. The very pollen of the grain was devoured by the insect, which numbered about three hundred to each head. What grain matured was of very inferior description, and averaged only six bushels per acre. Another field of seven acres drained during the previous winter, gave sixteen bushels per acre, sown on 8th May, from seed grown at Quebec, from grain imported from Normandy in 1859 by M. Renaud. Six bushels of the same seed sown on undrained ground on the 18th May, was so affected by rust that it gave no return at all. I also sowed 25 bushels of the celebrated Fife wheat, some on sandy soil about the 15th May, and some on clay, on the 26th May, neither being drained, but the yield was only 9 bushels and 12 respectively. You can easily imagine that I do not intend to sow any more spring wheat except as a mere matter of experiment. Last year my fall wheat came into ear between the 1st and 5th of June, and the spring wheat about the 17th. What I now rely upon is, by underdraining to give an early growth to fall wheat, so as to enable it to blossom a sufficient time before the midge appears, to place itself beyond danger, and if drainage effects this permanently, I think my labour in this direction will not have been thrown away. I have 80 acres of fall wheat sown, and of these 20 are upon thoroughly drained ground, with this disadvantage however, that they were under spring wheat last year, part of the worst affected by the midge. This however was the only drained land I had available for the trial, to make which I could not resist the temptation to follow this extremely unphilosophical course. I await the result of this year's harvest with great impatience. The past season I do not regard as a favourable one for comparing the condition of drained with undrained land, for the departure of the frost was not followed by any of those heavy rains which so commonly drench our clay soils, which then drying only by evaporation and the effects of our hot summer's sun, become almost as solid as when in the icy bonds of winter. Instead of this the frost and snow gradually and gently disappeared without rain, and none fell afterwards beyond what was much needed, the general temperature at the same time being moderate. The flow of water from my main drains was not remarkably heavy even in the spring, and they all gradually dried up except one; neither did they run again during the remainder of the summer, and only commenced, about six weeks ago, a light discharge, which has been gradually increasing. From these causes the soil generally retained throughout the season that finely pulverised condition which results from the effects of our winter frost. To bring about permanently this state of things, thus produced exceptionally last season, is the special attribute of underdraining.

I trust that the minuteness of detail in which I have indulged may not be considered unnecessary, or deficient in interest to some of your readers, and that others who may have been disposed to cavil at the recommendations and doubt the practicability of the adoption of this apparently expensive but necessary improvement in our farming, may be brought to see that the opinions advanced on this subject are not the vain fancies of a chimerical theorist, but the sound convictions of a practical working man.

Humberford, Feb. 23rd, 1861.

Mowing and Reaping Machines.

For the Agriculturist.

Amongst the many useful implements and machines invented for the saving of manual labour in agricultural operations, there are few more useful than reaping and mowing machines, as they assist the farmer at the busiest season of the year, and in the most laborious operations of the farm; though they have now attained such a degree of perfection as to bring them into general use on lands prepared for their reception, yet, like many useful inventions, they had to pass through many years of neglect. As the utility of well constructed reaping machines to the interest of the farmer can hardly be overrated, we propose in this communication to notice briefly some of the earlier attempts at reaping by machinery, both in Britain and America.

During the long wars in which Britain and the other European nations were engaged during the early years of the present century, the country became drained of men, a scarcity of agricultural labourers began to be felt, and a desire for some other method of harvesting than the reaping hook, which, up to this period, had been the only implement used for that purpose, began to be expressed.

The earliest reaping machine that we have seen noticed was one brought out in 1812 by the late Mr. Smith, of Deanston, to whom agriculture owes so much. This machine was brought out to compete for a premium of £500, offered by the Dalkeith Farmers' Club "for an

effective reaping machine," and though not successful, after several trials, Mr. Smith received from the club a piece of plate of the value of fifty guineas, besides silver cups, and a gold medal from Russia. This machine appeared at intervals with different modifications until the year 1835, when it worked very successfully at the meeting of the Highland Agricultural Society at Ayr. At that trial it consisted of a revolving cutter, 5½ feet diameter, composed of thin steel segments bolted to an iron ring, and the gathering of the cut grain was effected by two rakes placed on an upright cylinder, just above the cutter, which brought it off in a regular swath. It was used with two horses, working behind the machine, and cut a space 5½ feet wide. In 1815 a Mr. Scott, of Ormeston, made a reaping machine somewhat similar to Mr. Smith's, but it received no encouragement, and shared the same fate as its predecessor. In 1820 or 1821, a Mr. Mann, of Raby, in Cumberland, invented a machine on a similar revolving principle, but the cutter was twelve-sided, instead of circular, and was used with a skeleton cylinder over it with rakes; but revolving independently, containing twenty-five rakes each having ten teeth of six inches long. A fixed comb was placed so that its teeth alternated with those of the rakes, and as the revolving cylinder turned once for seven times of the cutter, this fixed comb took the straw from the rakes at a certain part of the machine and deposited it in a swath. Unlike other inventors who had used the same form of cutter, he placed the horses before the machine, and they walked by the side of the standing grain, as with the machines at present in use. One horse in this machine cut down a breath of three feet, and might average about seven acres a day.

In 1822 a Mr. Ogle, of Rennington, near Alnwick, invented a reaping machine which worked upon wheat and barley, but as it received no encouragement, only one was made. A description and drawing of it were published in 1826 in the fifth volume of the Mechanics' Magazine, and it is rather a remarkable circumstance that it answers in almost every particular to McCormicks machine that was invented ten year *later* and at the distance of 5,000 miles. In 1826 the Rev. Patrick Bell, Minister of Carmylie, in Forfarshire, invented a machine which has been used on his brother's farm ever since 1828, and which, in several trials, has proved fully equal to the American ones. It is pushed by two horses from behind, and its principles of action consist of a fixed bar of iron in front, to which are attached thirteen fixed shear blades, and twelve moveable ones are attached by a joint belt, and prolonged backwards in a tail-piece, till each rests in the revibrating bar between two pegs, which serve as a secure but simple loose joint; the cutting blades are fourteen inches long, sharp on both edges, and as the hind bar vibrates backwards and forwards, the edges clip together like scissors. There are revolving vanes in front to catch hold, and retain the grain against the onward pressure of the cutter, but chiefly to assist in laying the grain on the endless web. The web conveys the cut grain to right or left, and delivers it upon the ground in a regular swath. The manner in which the driving wheel causes the endless web and the vanes to revolve, and the knives to vibrate, all at different speed, though simple, could only be understood from a plate. The machine cuts down a width of six feet, and as it is wrought from behind, can cut the grain in any direction without any previous opening being made for it. Professor Wilson, in his speech at the Provincial Exhibition at Hamilton in 1853 states that "in 1835 five of these machines were made at Dundee, Scotland, and brought over to this country, and that some time afterwards Hussey's was brought out—the same as Bell's, with some few alterations." Though neither Smith's nor Bell's machines were generally used, we find them both advertized in Drummond & Sons,' of Stirling, lists of agricultural implements. We copy the following notices from these lists, published in the appendix of Jackson's Treatise on Agriculture in 1840: "Smith's reaping machine acts with revolving cutters; propelled by two horses; cuts down eight to ten acres per day, price £50. From the simplicity of the construction of this machine, and the excellence of its work, under ordinary favourable circumstances, it is likely to come into general use so soon as better cultivation shall banish the raised ridges, and uneven surface, which still so frequently occur."—"Bell's reaping machine—cast iron frame; acts on the clipping principle; cuts down from eight to ten acres per day; propelled by two horses, £45—has been a good deal employed in the Fife and Dundee districts, where it is much approved, and found very profitable."

Thus though several reaping machines were invented they were not brought into general use. Various causes may be assigned for this. The prejudice of farmers themselves, who have always been slow to adopt and encourage new methods of harvesting may be given as one.* The land too was at that

* To show how slow farmers are to adopt improvements in implements, we copy the following note by W. Chambers, Edinburgh, it is from Jackson's Treatise on Agriculture:

"I lately visited an arable farm of 150 acres in Surrey, on which, as usual in that part of England, there was neither a threshing mill nor fanners, the threshing being done by the flail, and the winnowing by throwing the grain from sieves against the wind, which blows through the barn. The farmer never heard of there being such an instrument as fanners, and would not credit the possibility of threshing by water or horse power. *This was within twenty miles of London in* 1840."

period mostly undrained, and, as the climate is very moist, deep furrows had to be made on much of the land to carry off the water—these rendering the effective working of machines difficult or impossible. Grain too, in general, is much softer in the straw in Britain than in this country, which makes it much worse to cut with machinery—but probably the chief reason of the little encouragement inventors met with, was that shortly after the close of the war in 1815, labourers became so plenty, and labour could be had at so cheap a rate, that there would have been little or no profit in using a machine, over hand labour. The state of society is very different from ours—there both men and women labour in the harvest field, and not only agricultural labourers but many tradesmen—there journeymen and apprentices, in the country, and villages, turn out to the labours of the harvest-field. And further, those who recollect how many threshing machines were destroyed by rural labourers on their first introduction into some parts of England, can have no doubt that reaping machines, had they been introduced at that period, would have shared the same fate.

We shall now notice some of the earlier mowing and reaping machines tried in America. In this country the case was entirely different from Britain. Such has been the condition of the people in this country—that in many parts of it manual labour has been found inadequate to the task of harvesting grain and grass in proper time and manner, while in all sections the cost of manual labour, where to be had, has often been found too expensive for profitable farming. We have seen a notice of a reaping machine that was invented by a Jeremiah Bradley, of Chester County, in 1821. It is stated that this machine answered the pnrpose tolerably well, and was used to some extent.

In looking over a file of the *Albany Cultivator* (from which excellent paper most of the following notices are taken,) the first notice we find is in the August number for 1835, where it is stated that "two implements have lately been invented; one we believe in Columbia, the other in Montgomery County, for cutting grass by horse-power; we have seen the latter, but as we did not witness its operation, we are not prepared to speak of its merits." In the April number for 1836 there is an engraving and description of Ambler's mowing machine, in which it is stated that the grass is cut by a scythe extending along above the teeth or comb, $6\frac{1}{2}$ feet long, with an alternate movement to right and left when the machine is in motion—it cuts five feet wide, and about an inch and a half above the surface of the ground,—the grass is left upright where it grew, which facilitates its drying, and saves the labour of spreading,—it is furnished with three spare scythes, and can be shifted at pleasure in three minutes; it is stated further that about 100 acres of grass were cut with the model machine in 1835, in Columbia County, at the rate of an acre in two hours. The machine was drawn by two horses, which travel on the mown grass. The editor states "that he had not seen the machine, but that gentlemen, in whose opinion he reposed confidence, assured him that the machine was a valuable acquisition to our husbandry. It was further stated in the May number for 1837, that this machine would cut from fifteen to twenty acres of grass per day—that it might be used in lodged grain with advantage—that it required but one person to tend it—that it weighed about 500 lbs.—that it was not more liable to get out of repair than a common horse-power—and that it would operate better on stony or uneven ground than the revolving horse-rake, and would cost $130. In the September number of the *Cultivator* for the same year is a cut and description of "Wilson's reaping and mowing machine," invented by Captain Alex. M. Wilson, Rhinebeck. It is noticed thus: "this machine consists of a carriage on two wheels, propelled by one or two horses or oxen travelling in the rear and pushing it forward. In front, at the bottom, is a horizontal wheel upon an upright shaft; which shaft and wheel receive a rotating motion, communicated by gear from the main axle which revolves with the wheels as the machine moves forward; the diameter of this horizontal wheel, with the addition of the knives projecting from its edge, measures the width of the swath, which is cut with the knives, as the wheel goes forward, rotating rapidly, and lying close on the ground. The apparatus that sustains the cutting wheel is so constructed as to accommodate its height to any inequality of the ground, and to give it any inclination required. The knives are sharpened by their own operation, without stopping the machine. There is also attached to the upper side of the cutting wheel, a rim which gathers the grass as it is cut, and lays it in a swath more regularly than can be done with a scythe. The editor states that he had seen the machine in operation, and that he thought it well adapted to economize labour on large smooth meadows. In the September number for 1837, there is a certificate signed by eight names, (J. Buel, publisher of the *Cultivator*, being one of them) stating that he had witnessed the operation of this machine, propelled by one horse, on a brisk walk, through a thick meadow of timothy and red-top, somewhat tangled—that it cut a swath from $2\frac{1}{2}$ to 3 feet broad in handsome style—that they were of opinion that with a double team, the machine would operate well on smooth bottoms free from stones, and would effect a great saving in manual labour.

The next machine noticed is Hussey's, now well known, which is thus noticed by a Maryland correspondent in the August number for 1839; "I know not whether the news may not

have already reached you, of a new mowing machine, invented by Mr. Hussey, which adapts itself to all surfaces, up hill and down, not encumbered with stones and stumps, and doing its work better than can be done by hand, to the amount in a day of what four cradles would accomplish." It is further stated that a Mr. Carroll had one or more of them at use on a large farm,—that his mowing power was a pair of strong horses, but that the writer thought that before the thing was brought to perfection "we must employ the electro magnetic impulse that your last Legislature thought no humbug."

In the March number for 1840 there is a notice of Carpenter's (of wheat lands) harvesting machine, which seems to have been intended for cutting and threshing at one operation—to have cost $600. It is stated "that the great saving in grain and labour, is in finishing the work without laying the grain on the ground—that it may be gauged to cut as high as the grain will admit—that the nine feet swathe streams from the cradles to the thresher so evenly that no more was required to finish 15 or 20 acres a day than was necessary to drive a common thresher —that it would save three-fourths of the expense of cutting, gathering, and threshing grain—that it was not difficult or expensive to keep in order." (This machine is, we believe, figured in the *Genesee Farmer* for October, 1839.)

In the June number for 1840, there is a notice from Sylvania, Ohio, of Vanfassen's patent grain cutter—for hand or horse power—the hand power to cut the grain and lay it in a swath—the horse machine also makes it ready for binding,—that with the hand machine a man would accomplish with ease as much in a given time as two or three could do in the ordinary way, —that the amount of work with the horse machine would be proportionably as the propelling force—that almost any boy that could manage a horse could work it—that it was so plain and simple—its cost would be comparatively trifling, and would be no obstacle to its general use wherever they raise large crops of grain.

In the May number for 1841, there is a cut of Hussey's, with a description, and some recommendations. Though it is evidently much altered, still it bears a general resemblance to those of his which are still in use, which are too well known to need any description here—it is there stated to have been in use several years.

In the *Cultivator* for December 1844, Mr. Hussey states, "that it was now ten years since he invented his machine, and that he had been constantly engaged in improving it."

The first notice we find in the *Cultivator* of McCormick's Reaping Machine, is an incidental one in the May No. of 1844, of a trial between his and Hussey's machine. Between the two inventors there seems to have been considerable rivalry. There is some discrepancy between the dates given of the first invention of McCormick's Reaper. In June, 1845, there is a letter from Wm. H. H. Taylor, Cincinnati, noticing this machine,—when, after praising the use and performance of the "Virginia Reaper," he says, "Although invented and publicly exhibited in operation in the harvest of 1831 (two years before Hussey's machine was invented), as appears by a letter published by McCormick in the *Mechanic's Magazine* for May, 1834, he (McCormick) did not attempt to introduce it till 1840, since which time it had been rapidly making its way into public favour in Virginia. Then in a letter from McCormick himself, in Dec. 1852, on the then recent trial of machines at Geneva, N. Y., he states that he had been engaged on his machine since 1834. In May, 1846, there is an engraving of this machine, stated to have been patented in 1845. In January, 1845, there is a cut and description of "Esterly's Patent Harvesting Machine," which was propelled from behind by three horses, and was intended to cut only the heads from the wheat: the heads were received into a large box, which was taken to the barn and emptied. This machine claimed to cut 25 acres of wheat a day—to save from 1 to 3 bushels of grain per acre over the usual way, &c. &c. We believe that this machine was considerably used in the West, where it was invented.

Though machines for reaping and mowing were greatly more needed in this country than in Britain, their progress was not near so rapid as might have been anticipated. In looking over some of the proceedings of the N. Y. State Agricultural Society, we find no prizes offered for either Reapers or Mowers, up to 1847, that being the latest year that we have a list of the premiums offered by this Society. But though no prize was offered, this Society awarded a special prize of $10 to Hussey in 1843, a diploma to Esterly's Harvester in 1844, and in 1845 they gave a gratuity of $15 to Mr. Hussey, "as some compensation for the trouble taken to give the public an opportunity to examine this valuable Machine." The writer adds, "That he had never had the pleasure of seeing this implement in operation, but that farmers who were in the habit of using them, spoke of them in the very highest terms, as a great saving of grain and labour over any other mode of harvesting." In 1846, though still no premium was offered, both Hussey's and McCormick's seem to have been exhibited; they are thus briefly noticed: "The Reaping Machines of Hussey and McCormick, both of which excited great interest,' 'and a special prize of $5 was awarded McCormick;—the same amount we see was given to a *Refrigerator and Shower Bath*. At the Show of 1847 a diploma is awarded to Hussey, Hornster, and Ketchum's Mower, which appears to have been then shown for the first time. It is stated that "it was somewhat similar to the 'Hornster,' but is calculated to

run closer to the ground, and does not require so much force." In 1848 a certificate was given again to Hussey and Ketchum, which seem to have been the only ones shown. In some remarks on the Implements at the show, it is said, "The trials which have been made with various machines for cutting grain, has, we think, demonstrated the practicability of their success," and it is confidently anticipated that they will be brought into extensive use on smooth lands in a few years. It is also said that Ketchum's Mower was tried, and made very good work—that it was simple and strong, and *it is hoped will yet be made to answer the purpose effectually.* At the Show of 1849 no mention is made of either Reaping or Mowing Machines. In 1850 there is no notice of a Reaper—a diploma is awarded to Ketchum's Mower. At the Show at Rochester in 1851, there were five Reapers and a Mower, and in 1852, when this Society's great trial at Geneva took place, there seems to have been 11 entries of Reapers and 7 of Mowers,—several, however, were entered in both classes. We need not pursue their history in this Society any further—but, we may notice, as a proof of how slow their introduction into general use was, that John Johnston, Geneva, well known as one of the most enterprising farmers of the State of New-York, does not appear to have used one before the harvest of 1848.—Reaping Machines came more rapidly into use on the Prairies of the Western States, than any where else. There the level fields ard sparse population afforded full scope for their successful operation. So early as 1849, the *Prairie Farmer* calculated that there were at work in the West over three thousand reapers and Harvesters, doing the work of nearly seventeen thousand men.

We are not aware who had the honour of first introducing Reaping Machines into Canada,—the first we saw was brought into the neighborhood of Cobourg, in the harvest of 1844, by J. Wade, Esq., the late President of the Provincial Agricultural Association. In the following season another was brought in by Messrs. McKyes,—both Hussey's. Since then they have been gradually working their way into public favour, and are now to be fouund in almost all parts of the country, where the land is adapted to their use.

In looking over the pages of the *British American Cultivator*, the first of our Canadian Agricultural papers, it is not till near the close of the 4th volume that there is any notice of Reaping machines,—then there is an engraving of Hussey's, which the Editor of the paper had seen at Utica. In the April No. of the paper for 1847, the editor states that he had been instrumental in introducing four Reaping Machines into the neighbourhood of Toronto during the harvest of 1846, and also that an ingenious person was building a number of Machines for him on an improved plan. In the following No. there was an engraving of the Machine, which very much resembles McCormick's. At the first Provincial Exhibition, held at Toronto in 1846, a premium of $30 was offered for the best Reaping Machine, but none appears to have been shown; we do not recollect of seeing any, and no premium is awarded in the Prize List. At the Show of 1847, first and second prizes were awarded to Mr. Bell, Toronto, for Reaping Machines, and one for a Mower to Mr. Murdock, Ancaster. At the third Show, at Cobourg, in 1848, a first and third prize were awarded to John Helm & Son, for a Reaping Machine, who are said "to have made some recent improvements on them." We believe these first machines were made on the plan of McCormick's, but that they soon abandoned it and built them on the plan of Hussey's. There does not appear to have been any Mower shown at this Show. At the Show of 1849, there was one prize awarded to a Canadian Reaping Machine, Mr. S. Chesnut, Pittsburg,—and at Niagara, in 1850, there appears to have been only one, awarded to J. W. Ball, Niagara.

We have thus brought up our notices to 1850; since then many new and valuable machines—candidates for public favour—of every shape and form,—Reapers, Mowers, Self-Rakers, combined Machines, of many various patterns, have made appearance, and are now manufactured in different sections of the Province.

In the construction of all machines, four objects are particularly desirable,—"1st, strength or durability of material; 2nd, simpicity of arrangement of parts; 3rd, exactness in fitting one part to another; and 4th, easiness and correctness of motion." As it is a general and well-recognized principle in mechanics, that the fewer the parts are in a machine, and the more simple the construction the better, a good Reaping Machine should not only be made upon a proper principle, but it should be made as light as is consistent with durability; it should also have as few parts as possible, and these so placed as to be easily repaired or replaced in case they went wrong. W. R.

Cobourg, February 1861.

Broad Cast Sowing Machines, &c.

Messrs. Editors,—As this is a terribly stormy day—the worst we have had this winter—I cannot employ my time better than by applying to you for some information.

1st. Can you let me know if there are any *broad cast* Sowing Machines made in Canada for a moderate price?

2nd. What do you think of "Hildreth's" Gang Plough with seed-box? Will it answer well as a sowing machine for *wheat*, *peas*, and *oats* on a 30 acre farm? Is it made in Canada?

3rd. I shall want to grow some 4 acres of turnips, carrots, or mangold wurtzel,—what kind of *seed drill* do you recommend, and the maker? and while on the subject of Roots, can you advise me as to the best plan for a Root House for say 4 acres Roots?—my land is *level clay*.

I was thinkfng of trying the following rotation for 24 acres arable land,—6 acres permanent pasture. Do you think it will answer, the stock to consist of 2 farm horses, 2 milch cows, and 50 sheep; the rotation to be in three fields of 8 acres each, and a three course rotation?

1st year,—8 acres spring wheat.

2nd year,—4 acres peas, 2 acres winter rye, sown after the peas, for spring fodder; 4 acres oats, seeded to clover.

3rd year,—2 acres turnips, after rye; 1 acre carrots; 1 acre mangel wurzel; all the roots to be manured; 4 acres clover.

To grow no grass hay; the oats cut up in the sheaf for the horses, with some carrots or mangel in the winter; the mangel and clover hay for the 2 cows, and the turnips and pea straw and wheat straw for the sheep.

This would leave the wheat and peas, and some roots, with mutton and wool, to pay expenses. Do you think it would? Or do you think I deserve the signature of, Yours truly,

"A Green Hand."

London, C. W., Feb., 1861.

REMARKS.

1st. Lloyd's Broadcast Sowing Machine is manufactured in Canada, and the price, we believe, is $10. We cannot speak as to its efficiency, not having seen it in operation. If our correspondent should desire some information about it, and will write us privately, we will endeavour to furnish him with such particulars as are obtainable.

2nd, We are not acquainted with Hildreth's Gang Plough; if any of our readers are, they will oblige by furnishing the information.

4th. There are several kinds of drills for sowing small seeds, manufactured in the States. Hallcock's single drill is a good one for small farmers,—price $5. Larger kinds are made, up to $10. Mr. Fleming, Seedsman, of this city, has them on sale. A Mr. James Greig was manufacturing drills a year or two since, and we presume he still is, in Pickering, Co. Ontario, C. W. A cut and description of this drill are given in the *Agriculturist* for 1859, page 80. We think the price was about $8, and believe it was found to work well.

A Root-House should be made as near the barn and cattle-sheds as possible. The side of a ridge, or rising ground is an excellent situation for a barn, and a root-house can readily be excavated under it, taking particular care to obtain perfect drainage and ventilation. We will keep this subject in mind, and prepare an article on it before the season for securing roots arrives. In the mean time we shall be obliged for any information from those of our readers who have had practical experience in the matter. Roots in general can be well kept in pits, chiefly above the suface in the open ground, but it is often inconvenient in getting at them during severe weather in winter. Swede turnips will keep well in this way, not requiring to be very thickly covered, especially at the top, where ventilation should be admitted. A portion of the parsnip crop had better be left in the ground all winter, and will come out quite fresh in the spring. They should be dug up as soon as the frost in the ground will admit, or they will rapidly commence growing, to the great injury of the roots for feeding purposes.

With respect to the above rotation on 24 acres, we are of opinion that our correspondent would have quite enough to do to sustain the amount of live stock mentioned in his communication. Liberal manuring, and deep and clean culture, on a naturally fertile soil, will sometimes accomplish wonders; but we are doubtful of our correspondent's project, either in a practicable or economical point of view. With full success in raising the crops mentioned, it might be possible to get the stock through the winter, but we believe it would be difficult, if not impossible, to keep them during the summer. Pea straw, especially if it is cut in a rather green state, makes very good food for sheep, but they would pay very little attention to the wheat straw. Again, grass seeds do not generally take very well with oats, the latter having generally, at least upon good land, rather too rank a growth, and thus smothering the seeds. However, with perhaps a slightly different arrangement of the rotation, and attempting to keep a somewhat less quantity of stock than proposed, our correspondent, if he did not succeed in all his expectations, would at least gain some valuable experience, and would soon become entitled to class himself as 'An Old Hand.'

Peru is coming into the world as a Cotton grower. Fifteen hundred bales of her cotton have just been sent across the Isthmus, most of it to Europe.

Agricultural Intelligence.

Specimens of Canadian Grain in England.

We find the following notice in a late English paper, of specimens of Canadian grain collected, and sent home last Autumn by Mr. Widder, Commissioner of the Canada Company here :—

"The Canada Company have lately forwarded to the Committee of Council for Education, for Exhibition in the Food Museum at Kensington, samples of various cereal products which obtained prizes at the agricultural exhibitions held in the Province this (1860) year. The wheat is very fine in quality, and fully bears out the oft-repeated assertion, that the soil and climate of Canada are eminently adapted for the cultivation of that important staple. The whole collection is worth the attention our Agriculturists, and especially of such parties as may contemplate making Canada their future home. The Canada Company are liberal contributors to the agricultural societies of the Province. These institutions which are numerous and well supported, have proved of the utmost benefit to the farming interests of Canada, by stimulating discussion and inquiry among the settlers, and promoting the introduction of improved methods of farming, whereby the industrial productions of the colony have been largely increased, to the manifest advantage of the settlers themselves. The Blue Stem Winter Wheat, which received the Canada Company's prize at the Provincial exhibition at Hamilton in 1850, was grown in Brantford, U. C., and weighs 66½ lbs to the bushel. The White Soules Winter Wheat which took the prize at the Provincial Exhibition was grown at Nelson, U. C. The Fall Wheat which took the Canada Company's prize at the Perth Agricultural Society's exhibition, was grown in Downie, U. C., and weighs 67 lbs per bushel.

Destruction of Sheep by Lynx.

Probably many of our readers will be surprised to learn that so formidable a wild animal as the Lynx is to be found in some of the comparatively old settled townships of Upper Canada. We find from the following account in the Guelph *Advertiser*, that animals of this species have been destroying a considerable number of sheep, and poultry in that neighborhood :—

A Lynx Hunt.—On Monday morning last, shortly before day break, Mr Peter Fife, of Puslinch, was aroused from his slumbers by the unusual barking of his dog. Getting up to ascertain the cause, his attention was drawn to his sheep-house, situated only a short distance from the dwelling. On entering this he found two of his valuable ewes lying dead, besides a number of hens. On examining the sheep it was found that their throats had been cut, although the incision was so small as to be scarcely discernible, unless closely examined. Unable to account for so peculiar a destruction of his sheep, he repaird to Mr. Kenneth McKenzie's, who gave it as his opinion that it was the work of a Lynx. After daylight they examined and found the tracks of two Lynx, leading to McKenzie's swamp. Having ascertained that the animals had not left the swamp, they gave notice to their neighbors, and in a sort time, although the rain was coming down in torrents, and the snow very deep and difficult to travel through, about twenty young men were assembled, with dogs and guns, and were soon on the track. They had not proceeded far in the swamp when up started one of the Lynx; several shots were fired at nim, and he "squatted," wounded, in the snow, so that he could not be found, the dogs not caring to venture very near them. The other took a tree, when a couple of shots brought him down.

Although severely wounded, he beat off all the dogs and was disposed of afterwards with pitchforks. The other could not be found, although traces of blood were discovered where he had been shot. The captured one was raised on the point of a pole and carried off to Mr Ingram's Inn, Brock Road, where refreshments were partaken of after the morning's exertions. The captured animal measured three feet five inches in length, and two feet in height. The Township Council happening that day to be in session, resolved to offer a bounty for all such animals captured in the township, if no bounty is given by the county.

There have been fifteen sheep killed in this neighborhood during the winter and fall by these pests of animals, besides a great number of turkeys, geese, and other fowls. Mr. John McKenzie, 7th con., had nine valuable ewes destroyed by them last fall, and Mr. Hugh Reid, 8th con., three. It is high time to adopt some means to exterminate these destructive brutes, as it is believed they are getting very numerous throughout the country.

There were a dozen of sheep in the place, and it is believed they all would have been destroyed, but finding the hens easier prey, they abandoned the sheep and glutted themselves on the poultry.

Farming in New-Brunswick.

(*From the Country Gentleman.*)

The President and Directors of the Mechanics' Institute in the city of St. Johns, a short time since, proposed two prizes of fifteen and ten guineas, respectively, for the best Essays upon the subject—"New-Brunswick as a Home for Emigrants—with the best means of promoting immigration and developing the resources of the Province."

This drew out a number of Essays upon this, to us, interesting subject. They were subsequently published at the expense of the Government, and from one of them I send you the following account of the products of two of our New-Brunswick farms.

One feature, perhaps, you will be somewhat surprised at, viz., the quantity of turnips raised. In British husbandry, as you are aware, this esculent is an essential. But even in our climate, with a long cold winter, we have many farmers, principally however, natives of Great Britain, who raise annually from 1000 to 5000 bushels of turnips, which are used for feeding cattle intended for beef.

The farms are severally owned by Messrs. Ferguson, Rankin & Co., Bathurst, and Francis Ferguson, Esq., St. Johns.

First—Village farm contains 334 acres cleared land, well fenced, and without a stump, besides about 50 acres pasture land, partially cleared, but not fit for the plow. The bulk of the land has been reclaimed from the wildernesss within the last fourteen years. The quantity under crop in 1859, was 136 acres, from which were

160 tons of hay.
300 bushels wheat—weight 61 lbs.
1,400 " oats. " 38 "
50 " barley " 48 "
3,500 " turnips "
2,100 " potatoes.
240 " carrotts.
75 " mangold wortzel.
17 pigs were killed, weighing 5,740 lbs.
8 head of cattle killed. " 4,740 lbs.

Besides 25 which were purchased from and fattened on the farm.

Stock on the farm Jan. 1860.

12 horses old and young | 46 head horned cattle,
27 sheep, | 13 pigs.

Ninety acres of land now plowed, ready for crop next season, 30 of which were stumped last year and plowed in October.

Second, or Somerset Vale Farm.—Containing 200 acres cleared land, well fenced and without a stump, besides a quantity partially cleared, and capable of pasturing at least 50 head of cattle. A portion of the above has been long under cultivation, but it is only within the last few years that an attempt has been made at systematic farming. Previous to that very little stock was kept on it, and the greater part of the crop was removed and consumed elsewhere.

Quantity of land under crop in 1859, was about 130 acres, from which were raised

150 tons of hay,
80 bushels wheat—weight 62½ lbs. per bush.
About 2,000 " oats " 39 "
3,000 " turnips,
750 " potatoes,
74 " carrots.

The stock on the farm January, 1860, consisted of

7 horses old and young, | 26 sheep,
41 head horned cattle, | 5 pigs.

72 acres plowed last fall for crops next spring.

J. D. M. Keator.

Hammond River, N. B., Dec. 10, 1860.

The Melbourne Prize Wheat and Barley.

The governor of Victoria has lately sent to the governor of this colony samples of the prize wheat and barley shown at Melbourne in April last, the former of which is said to have beaten the Adelaide prize wheat of February. These samples Sir Richard MacDonnell has kindly transferred to the South Australian Agricultural and Horticultural Society; and we need hardly say that they have excited considerable interest among our farmers, who, of course, are very anxious to see what grain their neighbors are growing, and to ascertain precisely how far the superiority of South Australian produce is real or imaginary.

The wheat sent from Melbourne is undoubtedly a very fine sample—the grain is small, regular, and beautiful in appearance. Its weight is 67 lbs. 2 oz. to the bushel, the weight of the prize wheat at the last Adelaide show having been 67lbs. 8½ oz. to the bushel; but we are compelled to say that it is not perfect as a millers' wheat, being rather flinty. With regard to the weight per bushel, it is difficult to make any accurate comparison; for not only do the mode of filling the measure and the manner of striking off the surplus grain differ at different exhibitions, but even the measures which are used are apt to vary very considerably. We are not doubting the correctness of the measure used at Melbourne, nor the artistic method in which it was filled and struck—of these we know nothing; but there is sufficient disagreement between the reports from different exhibitions in South Australia to prove that the returns of one place cannot always be safely compared with those of another. For example, the wheat shown in Adelaide on the 29th of February was shown again at the Mount Barker's Agricultural Society's exhibition on March 8, and the weights taken at the two places differed by more than one pound to the bushel.

The sample exhibited at Melbourne was not a portion of the wheat actually shown in Adelaide, but a sample from the same lot procured afterwards from the grower. It is by no means certain that the second sample thus taken from the bulk was fully equal to the 12 bushels originally selected for exhibition. To say the least of it, the Melbourne chosen sample was placed against the residuum of the Adelaide lot.

The Adelaide prize wheat was not, in the opinion of many of our most competent judges, the best sample which South Australia had produced. The judges at the Adelaide exhibition placed it first in order, but decision was reversed a week afterwards by the judges at Mount Barker and by those at Woodside, both of whom preferred the wheat which had taken the second prize to that which had taken the first prize in Adelaide. Not only so, but both the lots of Adelaide prize wheat were purchased by one

firm largely engaged here in the corn trade; and that firm sent the whole of the Adelaide second prize wheat to different English correspondents in preference to the Adelaide first prize wheat. We are justified, therefore, in supposing that the South Australian sample which was shown at Melbourne was not the best which had been shown in South Australia.

Of the Melbourne prize barley we have no remark to make, beyond saying it is a highly creditable sample. Its weight, as recorded at the show, was, we believe, 56 lbs. 4 oz., the weight of the first and second prizes at Adelaide having been 56 lbs. 3 ozs. and 55 lbs. 9½ ozs.

Friendly competition, upon terms involving the least possible doubt, will be exceedingly useful to both colonies; and we hope that a systhem of exchanging prize samples will be commenced and continued. By this means not only will the farmers of each colony be enabled to estimate correctly their own productions and progress, but any new variety of wheat imported or "created," as our friend, Mr. John Frame, would say, will be experimented upon simultaneously in Victoria and South Australia.

Already the Melbourne prize samples have fallen into the hands of many of our farmers, and our coming harvest will include some dozen little patches of them. No doubt the agriculturistst of Australia Felix will be glad next year to try in the same way the samples of Adelade prize wheat, which we hope that the society here will be careful to place at their disposal.—*Adelaide Observer, South Australia.*

Russian Agriculture.—At a recent meeting of the Chemico Agricultural Society of Ulster, Dr. Hodges, chemist of the association, read a letter from J. E. Scriven, Esq., Bondville, Tynan, the secretary of the Imperial Economical Society, St. Petersburg, with copies of the journal of the Society, &c. Dr. Hodges translated several portions of the journal, from which it appeared that recently the first bone mill had been erected in Russia, and that Hanson's potato digger, introduced in Libau, had not given satisfaction. He alluded to the zealous efforts of the present emperor to develope the immense resources of the Russian territories, and the desire to promote agricultural improvement which was exhibited by the Russian nobility.

Dr. Hodges had made analyses of oat refuse, showing that this matter possessed considerable nutritive qualities. The Doctor, however, cautioned farmers against giving it in too large quantities. He alluded to the balls which occasionally formed in the stomachs of horses about mills, one of these, which had produced the death of a horse belonging to Messrs. Andrews, at Comber, weighed no less than 7lbs., and was found to be composed mainly of the fine hairs of the oat formed into a compact mass. He also exhibited a ball taken from the stomach of a sheep, formed of particles of wool.

The Breed of Horses.—The horses are often the weakest class in the shows of the society. It was greatly to be regretted that too little attention was paid to the breeding of horses—an absence of correct principles too frequently prevails. He well remembered, a few years since, when officiating in the same capacity as he had filled that week, at a great agricultural meeting in Ireland, the judges, on taking a preliminary survey, observed in the class for "agricultural stallions" one animal, the lightness of whose crest and general docile appearance, awakened the suspicion, which, on examination, proved to be the case, that in certain essentials to the discharge of his vocation he was deficient. On turning to the Irishman in attendance on the horse, with that look of severity so becoming in judges, they asked how he could think of attempting so barefaced an imposition? The Irishman, not in the slightest degree abashed by their frowns, replied with all the coolness in the world, "Och, your honours, he was such a nice-un, we thought you would overlook it." (Great laughter.) He mentioned that anecdote not merely for the purpose of raising a merry laugh, laughable as the incident may be. Whenever the lame, the old, and the infirm instead of the young and the healthy, are devoted to the stud merely because they are unfit for any other purpose, or when a farmer possesses a valuable mare which he wishes to breed from, and accepts the services of the first weedy or faulty brute who may chance to look over the farm gate; in such cases as these the owners act on the principle of the Irishman, and fancy that nature will kindly overlook it. (Laughter.) Nature, however, never overlooks—never forgets; it was equally true in physiology, as it was in morals, that the faults of the parents should be visited on the children, "down to the third and fourth generation."—*Mr. Spooner, at the Dorchester Meeting.*

The Cultivation of Ireland.—The proportion of waste land in any country would probably surprise the most intelligent of its inhabitants if the quantity were actually measured. For instance the returns of the Registrar General of Ireland, for 1860, show that less than one-third of that green isle is under cultivation. The area of Ireland is 31,874 square miles, which is equal to 20,469,360 acres, and there were under crops this year 5,967,970 acres. Of this area, 2,637,557 acres are devoted to cereal crops; 1,607,483 to green crops; 1,594,486 to meadow and clover; and 128,444 to flax. Maine contains 32,854 square miles, New York 47,000.—*Scientific American.*

Benefits of Irrigation.—The *Boston Cultivator* states that Mr. Ephraim Mastin, of Sutton, N. H., raised the past season herdsgrass which grew five feet nine inches in length, with heads 7 inches long. It was taken from a field where the twentieth successive crop grew with-

out the application of any manure, except the semi-annual deposit of a small stream from Kearsage mountain, which has been turned upon it in the spring and fall."

Whitchurch Agricultural Society.—The above society has recently published, in sheet form, the result of the examination by the judges, of various root crops, within the bounds of the Society, entered for competition, and judged in the field. Some twenty-two questions were asked the various competitors, and their answers were all given in the table before us. Accompanying it, we have all the rules of the Society, and we understand every person becoming a member of the Association for the current year, is presented with one of these documents.

There were thirteen entries for prizes in Turnips; six for Carrots; and three for Wurzels. The first prize in Turnips was awarded to Mr. John Richardson, who had 1130 4-6th bushels per acre; second prize to Mr. P. W. Playter, who had1013 2-6ths bushels for acre; and the third prize, to Mr. Hugh Walker, who had 970 4-6th bushels per acre Amongst the various competitors for Turnips, the crop varied from 832 to 1136 4-6th bushels per acre.

In Carrots, Mr. Charles Brodie took the first prize, and had 1184 bushels per acre; the second prize was awarded to Mr Alex. Brodie, who had 1066 4-6th bushels per acre; and the third prize to Mr. Joseph B. Willson, who had 906 4-6th bushels per acre.

In Wurzels, Mr. John P. Davis took the first prize, and had 1706 4-6th bushels per acre; Mr. Charles Brodie the second prize, and had 1493 2-6th bushels per acre; and Francis Smith the third, who had 821 2-6th bushels per acre.

The table also shows the kind of soil—how often plowed—the kind of manure used, and what quantity, together with the time of sowing—how far the rows were apart, and many other important facts. This step on the part of Whitchurch is altogether a new one, but is a very useful and practical one, calculated to effect much good No one can examine the table before us without learning much practical information—well worth the price of membership, were there no other advantages to be derived.—*New Era.*

The Late Harvest in Europe.

We are indebted for the following facts to Mr. Thomas Carr's Annual Harvest Report, dated Rostock, January 22nd, 1861. This document being compiled with much care from personal observation, and an extensive commercial correspondence, is always looked to by persons engaged in the grain trade with much interest and deference :—

England.—Smaller breadth of land under wheat in 1860 than usual, in consequence of the high price of barley. In consequence of cold and wet ripening proceeded extremely slow, and crops never so late and unsatisfacory in harvesting since 1816. Much of it got in, in very bad condition, which must be kiln-dried before it can be ground, and some is totally unfit for human food. Norfolk and Suffolk districts most favoured. Foreign wheat will be required to a great extent, to mix with English,—the proportion last year, about one quarter old to three quarters new, will this year be reversed. Twenty-two sacks of flour, instead of, as is customary, twenty-seven, is got out of twenty quarters of wheat. The yield in quantity much below an average Barley an average, but in most places much injured by the weather. Peas deficient; beans better, but badly harvested. Oats middling, and very variable. Potatos, particularly in the midland and northern counties, very much rotted; as much as, perhaps, as in the noted year of 1847.

Scotland.—Breadth of wheat sown last year one-fourth or fifth less than usual. Yield under an average; but, on the whole, of better quality than most of the English. Weight 62 to 65 lbs. best, and good ordinary runs 60 to 62 lbs Barley sown more than usual, quite an average yield per acre, and much of it secured in good condition; mostly chevalier, from 51 to 56 lbs. per bushel Oats an average, both as to quantity and quality—from 40 lbs. to 46 lbs. per bushel. The severe storm of October 3rd greatly injured such as were standing in the field. Up to this period the weather in Scotland had been less unfavourable than in England, but afterwards the outstanding crops were nearly destroyed. Potatos but partially diseased, and turnips and mangold about an average crop.

Ireland.—Crops generally very deficient. Wheat is both inferior in quality, condition and yield; not more than one-third of the crop will prove of fair and average quality, and thus cannot make satisfactory flour, and the yield is fully one-fourth below an average. Oats very variable,—some good, while others have been so injured by the weather as to be fit only to be cut up for cattle-feeding. Barley about an average, but this grain is not much cultivated in Ireland. Beans good, but badly secured. Turnips and mangold poor crops. Potatos much diseased, although a much larger breadth sown, yet it will prove only half a crop compared with last year's growth.

France.—Crops, as in Great Britain, suffered from untoward weather. The yield of wheat is best in the south, south-east, and south-western departments. East part of the central and western tolerably good; the greater part of the central, and part of the north-western, under an average, and very defective in quality and condition. Brittany, average and moderately good quality. North and north-east about an average. The weather was most favourable in the southern departments, in the northern much the same as in Great Britain. Wheat from 61 lbs. to 63 lbs per bushel. Barley, crop large, but much of it injured by weather—from 51 lbs. to

53 lbs. Other crops middling. Potatos very variable; in some places much diseased.

Holland.—Wheat in quantity nearly an average, but much injured in colour and quality. Rye a good average yield, and quality fine. Barley a small yield, and quality bad, much sprouted in some places. Oats a good average yield, but quality very poor, and much discoloured. Potatos diseased to a great extent.

Germany—Austria.—Wheat about an average; fine quality and colour good. Rye, barley, and oats were in general good crops. In *Bohemia*, rye was a good average, and wheat and oats tolerably good. Potatos much diseased, and hay and grass crops bad. In *Moravia*, wheat yielded well, and very good in quality—63 lbs., and upwards, per bushel. Wheat was above an average in *Gallicia;* quality good, but in some cases not free from sprout. White from 60 lbs to 62 lbs. per bushel; red, 60 to 61 lbs Rye a rich crop, weight from 57 to 59 lbs. Barley a small yield, and not good in quality; weight from 48 to 50 lbs. Oats a good yield, but suffered from wet, and weight very light. Peas and tares satisfactory. In *Saxony*, wheat and rye a moderate average, and potatos more or less diseased. *Silesia*—wheat a good yield; quality pretty fair, some sprouted, weight 61 lbs. Rye good average, and middling quality, weight 57 lbs. Barley moderate yield, quality inferior, weighs 48 to 50 lbs. per bushel. Oats a good yield, and quality fair. Potatos only a quarter or one-half a crop. The above will more or less apply to other parts of Germany. In the *Rhine Provinces* the crops as to quantity, are about an average; quality, weight and color are various, but better generally than in Belgium.

Switzerland.—Crops, on the whole, much worse than last year, and will, as usual, require considerably more aid from Germany, &c.

Denmark.—Wheat above an average yield, quality indifferent, suffered much from wet, weight from 56 to 60 lbs. Rye and barley pretty good, but indifferent in color—former from 49 to 53 lbs. per bushel, and the same for barley.

Russia and Poland.—Immense damage was done by locusts in some parts, but in southern Russia the crops were large in quantity, but various in quality. In the *Odessa* departments the yield was a full average, but 62 lbs. for wheat is more than the rule. Rye and barley good crops, and well secured. In the *Riga and Archangel districts*, the crops generally were indifferent; which was also the case in the *St. Petersburgh departments*, occasioned by the intense heat in July. In *Poland*, the yield is not satisfactory, particularly in the *Warsaw* districts, there is much sprouted grain.

Turkey, Moldavia, Wallachia, and Hungary.—In these countries there was generally a full average of grain, notwithstanding the immense damage done by the locusts. Moldavia crops suffered from the intense heat in July, and again August, from heavy rain. Barley is light, averages about 44 lbs. a bushel. In *Hungary*, wheat about an average, somewhat injured by wet, from 60 to 62 lbs. a bushel. Oats a full average, rye very indifferent, and barley almost a failure.

Spain and Mediterranean Ports.—In Spain the harvest was very variable, good in the two Castiles and La Mancha, but indifferent in the districts of Seville, Alicante, and Andalusia. Wheat varies from 64 lbs to 61 lbs. a bushel. Crops in the Sicilies and in Portugal are less than expected. Algiers, Constantine, and Oran owing to the excessive heat at blooming time, the crops are very indifferent.

Egypt.—Crops are represented as yielding most splendidly; quality fine, and particularly of Saidi wheat.

From the foregoing synopsis the reader will perceive that in many parts of Europe the late harvest was deficient, both in quantity and quality; and that this was particularly the case with the British Islands. Fortunately for Canada and the United States, the crops have proved generally most abundant, and immense quantities of wheat have already been shipped to Europe, where it is evident, all the first quality that we can spare, will be required before another harvest to mix with their damaged grain, before it can be manufactured into flour. It is highly probable that as spring advances our really good wheat will command higher prices, especially, as is most devoutly to be wished,—if our neighbours should be able to adjust, in a satisfactory manner, the alarming difficulties with which they are now beset. There is another rather important element in this consideration of prices:—owing to the continuous rains in the British Islands, and portions of the continent, up to the very commencement of their unusually severe winter, wheat sowing had been seriously retarded; the seed-bed of next harvest is indifferently prepared, and it is said more than one-half of the heavy lands, intended for wheat, has not been sown. The last accounts were more favorable as regards the weather, and much will depend upon the character of this and the succeeding month. There is too much room to fear from analogy and a combination of causes, that the next harvest in Britain may also be a deficient one. Our farmers therefore, need not indulge in any apprehensions that wheat, for at least some time to come, will not maintain remunerating prices.

Horticultural.

Plants in Rooms.

The culture of flowers in rooms is a practice that happily seems to be increasing, as it tends in some degree to relieve our long winters of their monotony. What more agreeable to the feelings, when all nature without is covered with a white mantle, completely obscuring that rich

variety which at all other seasons adorns her bosom, than to behold the contrast of the growth and maturity of flowers in a warm, snug room? Ladies frequently evince much good taste and delicacy of moral feeling in these little attractions of domestic life. The following remarks from a recent number of the *Horticulturist*, are well-deserving of attention :—

We should be glad to do or say something to increase the number of those who grow room-plants. It is true that plants cannot be as well grown in rooms as in a well-constructed greenhouse; but, notwithstanding, there are some kinds that may be grown and flowered in a manner quite satisfactory, and with results highly gratifying. Certain conditions are necessary for the best success, and these it is our object to point out. The greatest obstacle to success is the dryness of the air: this may in a measure be overcome by a table suitably constructed, and the selection of plants best adapted to a dry atmosphere. The table should be the length of the window, and two or three feet wide, the boards being tongued and grooved. Around the edge nail a strip three inches wide, making the corners fit tight. The table is then to be filled with two inches of clean white sand. With a table of this kind, the foliage of plants can be frequently syringed or sprinkled with water, which keeps them clean and promotes their health; the drippings and surplus water are caught and absorbed by the sand, and the floor of the room is thus kept clean; the sand, indeed, ought to be kept constantly wet, and even watered for this purpose, if necessary. The evaporation from the sand will diffuse itself among the plants and through the room, and thus overcome, in a small degree, one of the chief obstacles to the successful culture of plants in rooms. The table should be fitted with rollers, to facilitate the operation of watering and cleaning the plants, and also for the purpose of moving it back from the window during very cold nights. The flower-stands in common use are altogether unfit for a room; the surplus water, dead leaves, &c., fall on the floor, injuring the carpet, and giving the room an untidy appearance. The table above described is free from these objections, besides having positive advantages for the successful growth of plants which no ordinary flower-stand can possess.

All rooms do not possess equal advantages for growing plants. A room with large high windows, looking to the south, is the best; the next best is one with a south-east or south-west exposure; next, east; next, west; and the least desirable of all, one looking to any point north. A large bay window with a southern exposure possesses many advantages for growing plants, quite equal in many cases, and superior in some, to these structures absurdly called "plant cabinets," unless the latter be intended for the preservation of dried specimens, the only purpose for which most of them are fit. A basement window with a southern exposure will sometimes answer tolerably well, but a room in the upper part of the house is always to be preferred.

Plants cannot be well grown any where, or under any circumstances, when crowded together; it is always more satisfactory to grow a few well than to grow many indifferently. During very cold nights the table may be moved to the middle of the room; and if the plants should unfortunately get frozen, darken the room and throw cold water over them repeatedly till the frost is drawn out, and then expose them gradually to the light. In this way we have saved plant. when the ball has been frozen as hard as a bricks Room plants should not be brought into the house till the nights get frosty, and while out of doors they should have a sunny exposure. Insects should be looked after, and destroyed on their first appearace; a little attention in this way will keep them free from such pests.

The Fruit Tree Business—Caution to the Public.

Editors of the Canadian Agriculturist,—Permit me through the columns of your widely circulated journal, to give a word of caution to the public, at least to that portion of them who are making arrangements to plant out orchards, or ornamental trees, the ensuing season. It appears that at the present time, owing to the unsettled state of affairs in the Southern States, "Yankee tree pedlars" who usually spend their winters there taking up orders for trees, have made Canada their field of operations, and at the present time probably there is not a Homestead throughout the length and breadth of the land that has not been visited by these gentry. Their whole stock in trade consisting of a beautifully Illustrated Catalogue; a Book of Portraits of Fruits and ornamented trees highly colored, &c. Now these men are not the agents of any of the respectable Rochester Nurseries, for the establishments they represent are what in Rochester are called "one horse nurseries," by whom many of our citizens have already been victimized; or they are mere speculators, who take up orders throughout the winter, and sell them to the nurserymen in the Spring, for which they are allowed from 25 to 30 per cent on catalogue price, and often more. Now the nurseryman not having the same responsibility as if the order was sent direct to himself, generally sends the stuff he can spare most of, without reference as to whether it suits the climate or not. These agents are then employed to deliver the trees, for which they receive cash or approved notes which they get discounted here, and this is the last that will be heard of them. The purchaser finds when it is too late, that he has been sold,

and he has no remedy, but purchases again from the next agent that passes, and is again deceived, until at last he gives up planting in despair and imputes his failures to every cause but the right one, namely giving his orders to irresponsible agents who have no reputation to maintain, that have not been heard of before, men who are obliged to get a certificate from the mayor of Rochester, knowing that the establishments they represent have not been heard of before; as it is a well known fact that these "small fry," generally change the name of their nursery and propietors every two or three years. Moreover, these agents are making use of the names of our most respectable citizens, showing large orders that they pretend to have received from them; and the paintings of fruits, &c., they show their victims are well calculated to deceive the public.

Now sir, I wish to say a few words as to the sorts of trees the purchaser receives. No doubt they are to all appearance, in some cases, handsome, well grown trees; but the climate and soil in which they have been raised, is so favor able to the growth of fruit trees, and the land has been so highly manured in order to force the trees into a luxuriant growth, in order to make a quick return for the labor bestowed on them, that when these trees are removed into a more ungenial climate they receive a check to their growth that they seldom recover; besides, many of the varieties are entirely unsuited to the climate of Canada. The apple trees are invariably root grafted, that is they have been grafted upon small portions of the root of the seedling apple; they are then planted in the nursery rows, more particularly in the "small fry of nurseries that surround Rochester," at the distance of two or three inches in the row. If they all grow, which they are apt to do, they remain in this situation until they are fit for sale; they stand so close together that they are forced up into an unnatural growth of six or eight feet in the course of a few years. The writer of this, once having visited one of these apple tree manufactories, as I may call them, made the remark to the proprietor "how could he expect such trees ever to grow if removed into the climate of Canada." They sir, said he, these are just the sort of trees the Canadians like, good tall trees that they can plough under without intefering with the branches, and besides they are the just the sort we can sell most off to the pedlers that go South and North, the roots not being large they are easily packed, consequently the cost of transportation is considerably reduced. The pear trees, I would not have such trees as a present, generally sent over here, budded on the stock (principally the Fontenay Quince) are entirely unsuited to our climate, and the varieties are in most cases such as are not suited to a Northern climate.

The Cherry Trees, also, are mostly of the Heart or Bigarreau class—free growers, that are generally ready for sale at 1 or 2 years from the bud. For a Southern climate, of course there is no class of cherries to compare to these, but they are entirely unsuited to our colder climate. No nursery man would think of recommending his customers to plant such Trees, except under the most favourable circumstances of soil and situation.

The Duke and Morella Cherries being of a very slow growth and hardy habit, are the only kinds that will succeed here, but they are not such fine looking trees as the Bigarreaus, consequently they are discarded by the tree-pedlar.

The Plum Trees also sold by these pedlars are buded on the Peach stock, because it is the cheapest and easiest raised. The kernel is planted in the spring of the year, and is budded the following autumn. The trees are ready for sale in a couple of years, whereas, if they had been budded on the native plum, (the only stock capable of withstanding the severities of our winters), the cost would be double. Most purchasers never think of asking ths question, What stock are they worked on? but are content with the fine appearance of the Trees. Now as the Peach itself will not live in this part of Canada, how can you expect the Plums that are budded on it to live long. This is one of the causes why nearly all the imported Plum Trees are dying all over the country. Then there is the Lawton Blackberry, which these pedlars are selling at from 50 cents to a dollar each, the price of which at any respectable nursery is only $8 per 100, but which no respectable nursery-man would think of selling under any circumstances, except they are especially ordered, because he knows they are not hardy enough, as he has to cover them during the winter, otherwise they would be winter-killed.

As to Ornamental Trees,—look into any of our hotels, you will there see flaming placards bordered with portraits of Arbor Vitæs, Balsam Firs, &c. &c. Now if they mean the "Chinese Arbor Vitæ," it is well known that we have to make it one of the ornaments of our green house for the winter, as it will not live in the open air. If it is the Canadian Arbor Vitæ or White Cedar, you can get as good specimens in any of our swamps any day. The Balsam Firs are natives of the country; they are taken over south of the lakes, and planted into nursery rows there for a few years, and then sent back to us fine evergreens, and sold at enormous prices.

Now Mr. Editor, I will give you an instance (and I could give a great many, but it would occupy too much room in your valuable paper) how parties have been victimized by these impostors. A gentleman in Weston made a purchase of $150 worth of trees and shrubs from one of these agents. The prices he was charged were enormous,—Tulip Trees 3 feet high, $2 each, and others in proportionately high prices, the ordinary nursery prices for such trees being seldom more than 25 cents, or 50 cents at the

outside. In the fall of the year the gentleman said he would be glad if any one would offer $40 for the lot: he had no remedy, but put up with the loss. Now the remedy I would propose for all this, is; Let the intending orchardist, instead of giving his orders to one of these agents, send direct to some respectable Nursery-man, who has a reputation to maintain; he will then have some guarantee that if failures should take place, or errors be committed, he will know where or who to apply to for a remedy. The Nurseryman, for his own credit, will see him righted: but let him avoid the "Tree-pedlar" as he would the plague, except he finds "the pleasure is as great in being cheated as to cheat."

I am, Sir, your obedient servant,

A Fruit Grower.

Winter Mulching.—At the commencement of winter, those who have young trees liable to be injured by cold, and which need high culture, will find an especial advantage in applying a winter mulching of short manure. This treatment is eminently useful for *dwarf pears*. Protecting well the part below ground, is of use to the exposed portions above—in the same way that a man's feet and ears have been found to keep warmer on a cold day, when his body is well clothed.

The best times in the year to manure trees, is late in autmn. If applied earlier, it prevents proper cultivation; and if spring, its protecting influence is lost, and the liquid portions do not become so well diffused through the soil by the time that growth commences. The manure should be *short*, (not necessarily old or rotted,) to prevent attracting mice; or if short manure cannot be had, a small cone of fresh earth should be raisad around each tree eight or ten inches high, which will effectually exclude the mice. In the spring, the manure in spaded in, if in a garden, or worked under by means of a gang-plow, if in an orchard kept clean by horse power.—*Rural Affairs.*

Winter Protection.—It is best not to cover raspberries, grape vines, etc., till winter is close at hand, as they will ripen and harden better if exposed till that period. Grape vines are often sufficiently protected if simply lying flat on the ground—or at most, with an inch or two of soil. The same remark will apply to the raspberry and blackberry. Caution is needed in the use of straw around fruit trees, as it may encourage the depredations of mice. If covering the stems, it should not be closely tied about them, as the circulation of some air is best. Evergreen boughs placed about any tender trees, afford the best and safest protection. The thicker the coat they form, the more complete will the covering be.—*Rural Affairs.*

Rabbits from Trees.—A correspondent of the *Prairie Farmer* says trees may be protected from Rabbits by a wash of soft soap, in which is mixed sulphur. A little clay in the mixture will prevent the soap from washing off by winter storms. Put it on with a paint brush or a stiff whitewash brush.

Canker on Fruit Trees.—We have seen it recommended to cut off the diseased parts of the limbs, dig a trench around the the tree and fill with new rich soil. Dig down and cut off the perpendicular roots. This has cured the Canker.

Grafting Peach Trees on Plum Stocks has proved in many cases to be an unfortunate practice. They are liable to be broken off by the wind at the junction of the graft. In a windy country this will prove a serious objection.

The Value of the Black Currant.—A correspondent calls attention to the following extract from "Le Jardin Fruitien du Museum," recently published in France under the auspices of the Government:—"The planting of the black currant bush was commenced in 1841 at Dijon, and a small portion of the liqueur was then made. It was so well liked, that since then near two millions of current bushes have been planted, covering a space of ground occupying twenty miles in length, by from one to four miles in breadth, and this exclusive of several other districts of vast extent; the most remarkable feature being that the principal plantations have been, and are making, in the district producing the fine Burgundy wines; in some instances the vine giving place to the currant. In the department of the Cote d'Or alone there are thirty manufactories for the fabrication of the liqueur de cassis. The trade is rapidly increasing, and the supply not equal to the demand. Each bush yields from 2 to 5lbs., the manufacturer paying from 25s. to 30s. per cwt. The acre yields a profit to the agriculturist of from £22 to £40. The wholesale price of the liqueur is about 2s. 9d. a quart. In the town of Dijon, upwards of a quarter of a million of gallons are produced, yielding a large revenue. The bushes are planted in trenches, 4 feet 3 inches apart, and 15 inches deep; the plants being placed some distance asunder. The soil most suitable if chalk and clay." The climate of these countries is better adapted to the growth of currants than France. We can produce them cheaper and larger, and, no doubt, good culture will improve the flavour. In an agricultural point of view, the information is important; in a commercial, even more so.—*Mark Lane Express.*

A machine has been invented in England which, being attached to the stern of a ship, pumps her out with a rapidity in ratio to her speed.

Domestic.

To kill Cockroaches, Ants, &c.—Equal parts of dry red lead and sugar, well mixed, is given as a certain and sure exterminator of cockroaches, black and red ants, and other pests. As every household is more or less plagued with these vermin, this recipe, so easily provided, should be tried. The simple mixture should be put in places infested by them. Care should be observed in the use of it, as the lead is poisonous.

The Poultry Yard.

Fattening Turkeys.—A writer in the Germantown *Telegraph* furnishes that journal with the following statement:—Much has been published of late in our agricultural journals in relation to the alimentary properties of charcoal. It has been repeatedly asserted that domestic fowls may be fattened on it without any other food, and that too, in a shorter time than on the most nutritive grains. I made an experiment, and must say the result surprised me, as I had always been rather skeptical. Four turkeys were confined in a pen, and fed on meal, boiled potatoes and oats. Four others of the same broods were also at the same time confined in another pen, and fed daily upon the same articles but with one pint of finely pulverized charcoal mixed with their meal and potatoes. They also had a plentiful supply of broken charcoal in their pen. The eight were killed on the same same day, when there was a difference of one and a half pounds each in favor of the fowls which had been suppled with the charcoal, they being the fattest, and the meat greatly superior in point of tenderness and flavor.

Veterinary.

Thorough-Bred.—We have often objected to the use of this term until it could be settled what it means, which as yet has not been done. It is a high sounding phrase, but frequently serves no other purpose than to deceive ignorant people. Hear what the well-known writer "Cecil" says about it in a paper on "The Physiology of Breeding," written for the *Farmer's Magazine:* "The term thorough-bred is an expression not clearly defined, as regards any of our domestic animals, but it would be very desirable to have some rule established. It may be accepted as a principle that breeding from animals endowed with certain properties and perfections through several generations, constitute the claim; *though there is no adopted rule to determine how many generations are sufficient to establish the title.—Boston Cultivator.*

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

Continued from page 127.

HALTON.

County Society.—Two hundred and twenty-five members; amount of subscription, $266.50; balance in hand from previous account, $436.46; deposited by township branches, $439.50; Government grant, $599.96; grant from County Council, $100; admission tickets, $79.67; special donations for premiums, $50; total receipts, $1942.09. Paid township branches, $799.69; paid in premiums at ploughing match and shows, $787; expenses and sundries, $149.01; balance in hand, $206.39.

TOWNSHIP BRANCHES.

Esquesing.—One hundred and twenty members; amount of subscription, $183.40; balance from 1858, $12.18; share of grant, $92.13; total received, $287.71. Paid in premiums, $169; expenses, &c., $48.45; balance in hand, $70.26.

Nassagawega.—Ninety-six members; amount of subscription, $124; share of grant, $86.37; total, $210.37. Paid Treasurer balance from previous year, $7.68; paid premiums, $108.75; expenses, $21.70; balance in hand, $72.24.

Nelson.—One hundred members; subscription, $114; balance from 1858, $34.18; share of public grant, $78; grant from township Council, $20; fees, &c., $15.62; total received, $261.80. Paid in premiums, $203.50; expenses, $27.05; balance in hand, $31.25.

Extracts from Report.

The soil of this township is mostly a clay loam, some of it tolerably hard, with a tight clay subsoil. There is a mountain range running across from south to north furnishing any quantity of lime stone, with free stone in sufficient quantity for building purposes, and the most delightful spring water, and which is also well timbered. The land adjoining is of the best description for wheat. Along the lake shore there are a few sandy farms of excellent quality. Part of the grant to the late Joseph Brant is of this kind, on which is the village of Wellington Square.

Water Power—The Twelve Mile Creek runs from west to east through the township, affording a large amount of valuable water power. On this stream there are five grist mills in operation, running from two to four run of stones, and two of these are splendid mills. There are ten saw mills on this stream within the township doing a fair business. There is also on it a foundry, at Lowville, Mr. McLaren, proprietor. Most excellent ploughs, stump machines, straw cutters, mill irons, &c., are turned out from these works. The Canada Powder Company's Works are worked by this stream, situated near Cummingsville. They were erected in 1855, at a cost to the company of eighty thousand dollars. The mills are built on the most improved principles, and are capable of manufacturing one hundred and fifty kegs of powder per day. The mills were in successful operation the first two years after they were built, and the company found a ready sale for all they could manufacture; but since the commercial crisis came on and improvements and public works have been checked, the company have not been able to find sale for all the powder the mills are capable of turning out, and consequently they found it necessary to curtail production, running the mills only for five or six months in the year. The company manufacture all descriptions of powder, and it is said that the quality is quite equal to the best brands of the imported article.

Farms—The following statement of four persons, who are among our best farmers, will give a correct knowledge of the proportion of land under the different kinds of crops:—1st. Peter Fisher has in his farm 200 acres, say meadow and pasture 55 acres; wheat, 30 acres; oats, 10 acres; fallow, 15 acres; roots, 5 acres. 2nd. Thomas Alton has 300 acres; meadow and pasture 96 acres; wheat, 57 acres; oats, 12 acres; fallow, 30 acres; peas, 12 acres; turnips and potatoes, 4 acres; barley, 11 acres. 3rd. John Fothergill, 350 acres; meadow and pasture, 100 acres; wheat, 50 acres; spring crops, 50 acres; turnips and potatoes, 50 acres. 4th. Robert Ireland, 300 acres; meadow and pasture, 80 acres; wheat, 30 acres; fallow, 20 acres; spring crops, 30 acres; potatoes and turnips, 12 acres.

Manner of Cultivation—Fallow is generally ploughed three times. First break up early in the season; then cross plough the latter part of July, after having harrowed it lengthways and then crossways, or gone over with the large cultivator. Now it is again harrowed smooth and then ridged up for the seed, which is sown broadcast, and harrowed in; 1½ to 2 bushels per acre. If it is to be seeded with grass, timothy is sown in the fall and clover early in the spring. Much wheat is sown after barley and peas; then it is only ploughed once, soon after those crops come off.

Roots—Mangel wurzel, carrots, turnips, &c., are often sown on stubble ground, by manuring well, ploughing and harrowing at least twice, then drilling 2½ feet wide, and sowing with the hand or seed drill, cultivated with the small cultivator or plough, cleaning and thinning with hand and hoe. There is far too little of these crops sown.

EXPORTS FOR 1859.

Fall Wheat (Bushels)	125,192
Spring Wheat	27,190
Oats	25,000
Barley	35,460
Peas	8,000
Bbls. of Flour manufactured out of above	12,353
Butter (kegs)	100
Lumber shipped (feet)	2,500,000
Lumber at Port Nelson and Wellington Square ready for shipm't	1,000,000

IMPORTS FOR 1859.

We only give two articles:

1st, Salt, of which there were 1,500 bbls. the past year from Oswego, and sold at Wellington Square for one dollar to one dollar and twenty-five cents per barrel, of excellent quality.

2nd, Plaster of Paris, of which there were 1,000 barrels imported from Oswego, and sold at 80 to 87½ cents per barrel. The Grand River Plaster was decided to be the best by a full board of Directors without one dissenting voice.

NURSERIES.—There is one Nursery in the Township—that of Dunning, Campbell, & Co., whose sales are from 15 to 20,000 trees annually, about three-fifths of which are Apple, the remainder Pear, Plum, Cherry, &c. Sales are increasing, and the business paying very well.

MARKET GARDEN.—Only one general Market Garden, property of Mr. Dale, on

the lake shore. His sales amounted to $1,200 during the past year; the business not so good as two or three years ago.

Drainage.—The value of draining does not seem to be much appreciated in this part of the country. The following statement has been kindly furnished us by Mr. David Ghent, who has given his attention to the subject for fifteen years past.

Mr. Ghent's system is composed of two methods, which he considers valuable on account of their cheapness and simplicity:

1st. The drains are dug about sixteen inches at the top, and nine inches at the bottom, being about from twenty-four to thirty inches deep; then stones are gathered from the fields or brooks, and small ones about two or three inches thick placed on each side at the bottom, and those of a larger size laid over the top, leaving a free passage of about three or four inches for the passage of the water, when the dirt is filled in. Now this is easily done with any kind of rough stone, not being too large to fit down into the drain, and will cost about sixteen cents per rod. This method, although it took but little stone, yet required more than could be easily supplied, when in some fields of six acres, it would be necessary to make six or seven drains the whole length of the field.

2nd. We now come upon another plan in order to save stone. The drains were dug as in the first, with this difference, say dig the right hand side at the bottom perpendicular, or a little under, four inches from the bottom, and making the same side of the bottom two inches lower than the other, forming an acute angle at the right hand side, in the bottom. Now take stones that will reach from five to seven inches and set them on the end or edge with the widest end upwards, and take smaller ones to fill up any holes at the back. Now the dirt is put in with care at the first, until the stones are completely covered, then it may be ploughed in, leaving a clear passage for the water. We have found these drains to answer every purpose, and have never had one to stop or get choked. It is the cheapest method of making them by hand, especially where thin flat stones can be easily procured, costing about ten cents per rod.

Trafalgar.—One bundred and thirty-one members; subscription, $159.50; balance from previous year, $160.99; grant from oakville village, $100; public grant, $103.53; fees, &c, $33.75. Total received, $557.77. Paid premiums at Show and Ploughing Match, $417.50; expenses $89.22; balance in hand, 51.05.

HAMILTON.

Electoral Division Society.—Two hundred and seventy-seven members; amount of subscriptions, 310.50; balance from 1858, $16.52; Government grant, $240; grant from City Council, $300; admission tickets, $201; total receipts, $1068.12. Paid in premiums, $431.25; hurdles for use at shows, $75; miscellaneous expenses, $561,87.

NORTH HASTINGS.

County Society.—Seventy-eight members; subscriptions, $78; balance from previous year, $289,38; deposited by township branch, $96; public grant, $307.80; received from sale of Alsike clover seed, $18.12; received from use and sale of Bulls, $137.75; total receipts, $927.05. Paid for three Bulls for Society, $200; expenses removing and keeping do., $184.17; paid townsip branch, $192; paid for copies *Agriculturist*, $33; paid for Alsike clover seed, $25.30; premiums, $201.90; incidental expenses, $28.20; balance in treasurer's hands, $63.48.

TOWNSHIP BRANCH.

Rawdon.—Sixty-two members; subscriptions, $63; balance from 1850, $60.23; share of grant, $96; received for clover-seed sold, $41.30; total received, $260.53. Paid for clover seed, $49; premiums, $148.20; expenses, $260,53; balance on hand, $35.68.

SOUTH HASTINGS.

County Society.—One hundred and eighty-three members; amount of subscriptions, $210; balance on hand from previous year, 34.62; government grant, $415.16; admission tickets and sundries, $94,38; total receips, $754.16. Paid for *Agriculturist*, $50; premiums, $406.90; expenses, 158.82; balance in treasurer's hands, $138,44.

Exxtract from Report.

On reviewing the proceedings of the past year, there appears to be great cause to congratulate the Society and those generally who are interested in farming pursuits, upon the progress which has been made towards the attainment of a right understanding of the state and prospects of Canadian Agriculture; and introducing the knowledge thus acquired into successful operation.

The old practice of raising grain-crop after grain-crop, in uninterrupted succession, is gradually giving way to a system approaching more nearly to that adopted in those countries where the experience of long years, united with the discoveries of modern investigation, has almost raised agriculture to the level of an exact science. It is amply proved, by the sad experience both of States and individuals, that the successive cultivation of the harder grains, epecially of wheat, gradually exhausts from the soil on which it grows those elements which are necessary to its productive capabilities; and that this exhaustion goes on, until the produce ceases to be remunerative, and the farmer has only the alternative of suffering his land to go out of cultivation, and seeking for a new location upon a virgin soil, or of supplying to his fields, in the shape of costly, and, in this country, almost inaccessible manures, the ingredients which have been abstracted by a long course of injudicious treatment.

The introduction of an increased breadth of hoe crops, involving, as it does of necessity, a corresponding increase of the number of animals kept by the farmer, goes far to eradicate this evil, or at least greatly to mitigate its effects upon the constitution of the soil, and the profits of its occupants. Not only does the cultivation of an enlarged quantity of green fodder and roots enable the farmer to raise and fatten a greater proportion of live stock than before, but it in a manner compels him to do so, in order to the profitable consumption of his produce; while at the same time it furnishes him with an increased supplly of the staple, and, all things considered, the most valuable pabulum for future crops, farm-yard manure.

The presence of hoe-crops gives the farmer an opportunity of clearing his land from noxious weeds; and of reducing it by well applied labor, to that state of tilth which experience has proved so largely to augment its productive powers; while the frequent disturbance of the soil tends to turn out from their snug nests beneath the surface, and expose to the scorching rays of the sun, and the appetites of the feathered tribes, the larvae or grubs of these insect destructives, which, when suffered to multiply undisturbed, commit such terrible devastations, and destroy the hopes of the husbandman, by converting his promising crops into barren straw. The great breadth of land devoted to production of hoe-crops in the County of Hastings, and we believe in Canada generally, during the past year, affords therefore a legitimate subject of congratulation, both to the Society and to the country at large, as it shows an approach to a more healthy and general appreciation of those great principles, the application of which to the practice of husbandry has so vastly increased the produce and augmented the profits, of the farmers in other countries within the last twenty years.

Another indication of progress in this direction is afforded by the greater number and improved quality of sheep bred and fed in the country, as compared with those of former years. Many of the animals of this class are such as may be shown with pride by their owners, and viewed with pleasure by their visitors; and it is to be hoped, notwithstanding the dicta of those who affirm that Canada is not a suitable habitat for the sheep, that wool may yet take a place among our staple products.

The attention of our farmers has also been directed to the raising of horses and cattle, and in consequence a marked improvement has taken place, both as to breed and condition, in the latter; while the horses of the County of Hastings, which have long enjoyed a high and merited reputation, are likely to be more sought after in future by buyers from the neighboring country; and bring more remunerative prices to their owners, thus constituting another important item in the agricultural returns of the county.

The introduction of machinery of an improved description, to a much greater extent than was formerly the case, forms also a gratifying feature in our review. Straw-cutters are now generally in use, and it is a good omen to observe with what avidity the improved forms of this machine are brought up by the farmers of Hastings. Indeed every improvement in agricultural implements, which tends to lighten labor, or make its application more effective, whether the production of native talent, or introduced from other countries, is sure, if possessed of intrinsic advantages, to meet with abundant patronage; and we hope to see the day when Clod-crushers, Norwegian-harrows, Grubbers, and Bone-mills, shall be as common in the older Townships of the County as they are in the best parts of England and Scotland.

While the Farmers of Hastings have been

thus active in out-door improvements, their wives and daughters have been by no means idle at home. The dairy has engrosssed a large share of their attention, and the quantity and quality of the butter and cheese they have turned out, has kept pace with the other improvements we are so happy to notice; and we feel confident that they will go on with increased ardour, as the augmented number of cattle gives them more and more material to work upon, until production shall have reached its utmost limit; which we are sure will only be determined by their ability to undergo the necessary amount of labour.

Last, but not least, we have to notice the great amount of draining done within the past twelve months, which exceeds that of any former year in a double or even a threefold proportion. This is one of the most important and beneficial improvements that can be made upon land, as it not only removes one of the most serious obstacles to the growth of the crops upon which we depend for our subsistence, but even tends to ameliorate the climate in no small degree, for the presence of water continually evaporating under the influence of the sun and the atmosphere lowers the temperature of the air and strikes cold to the roots of the plants and stunts their growth, while in its subsidence into the soil it carries down the soluble substances from which they derive their food, to a depth to which the roots cannot penetrate, and the noxious matters existing in the subsoil are brought to the surface by evaporation, thus exercising a double action equally prejudicial to a healthy vegetation.

On the whole, we repeat that the past year's transactions have exhibited a most gratifying amount of progress; and though we admit that much of it is owing to the wholesale destruction of the grain crops for some years past by that pest of the agriculturist, the wheat midge, whose ravages have compelled our farmers in self-defence to seek some more reliable system of conducting their business; yet we trust that the late severe dispensation may eventuate in establishing a more remunerative, less exhausting, and less precarious state of agricultural production; and we venture to express our hope that the decrease of its peculiar food, and the improved state of tillage, which we aticipate from the changes we have recorded, may have the effect of gradually decreasing the numbers of the midge and its kindred destroyers, and perhaps in course of time, of reducing its ravages among our crops to a thing of the past and a subject of history.

HURON.

County Society.—Eighty-three members; amount of subscriptions, $89; deposited by township branches, $471; Donation from Canada Company, $60; government grant, $479.98; received from premium wheat sold for seed, $47.08; received for turnip, mangel wurzel and clover seed, $155.37; sundries, $97; total receipts, $1395.43. Paid balance due the treasurer from previous year, $86; for clover and other seeds, $165.77; township branches, $743.87; premiums, $234; expenses and sundries, $156.46; balance in treasurer's hands, $9.33.

Extract from Report.

Taking the County of Huron aa a whole, we have a soil and climate not surpassed, and rarely equalled by any county in Canada. The means and methods employed by the great bulk of the farmers are not in proportion to these advantages, but there are some good practical farmers in Huron,—men who understand their business and attend to it in the proper way. The abundant results of their superior farming may incite others to follow their example, and in time the County will be as noted for its well cultivated farms as it now is for the richness of its soil, and the salubrity of its climate.

One illustration of the improvement of this county is the large yearly increase of the quantity of wheat exported, and that of a quality not inferior to any in Canada. The farmers in this county no longer labour under the disadvantages of bad roads. During the last eighteen months there have been (running through different sections of the county) about 150 miles of road gravelled. These roads lead generally through the most thickly settled and best cultivated parts of the county, and add another feature to the many improvements that are yearly taking place.

TOWNSHIP BRANCHES.

Ashfield & Wawanosh.—Forty-three members; subscription, $46; balance from 1858, $48 42; grant, $24; sundries, $1 87; total received, $120 29. Paid premiums, $60 50; expenses, $8 63; balance in hand, $51 16.

BIDDULPH.—Fifty members; subscribing $1 each; no further report.

CLINTON.—Fifty-three members; subscription, $71; share of grant, $29; total received, $100. Paid in premiums, $85; expenses, $16 85.

EXETER.—Eighty members; subscriptions received, $74; balance from 1858, $28 59; grant, $41 70; total received, $144 29. Paid premiums, $107; expenses, $24 28; balance in hand, $13 01.

HARPURHEY.—One hundred members; subscriptions, $100; balance from previous year, $36 27; grant, $58; sundries, $14 10; total, $208 37. Paid in premiums, $168 25; expenses, $32 27; balance in treasurer's hands, $7 85.

HAY.—Forty-four members; subscriptions, $45 50: balance from 1858, $24 15; goverment grant, $40 56; total received, $14 21. Paid premiums, $80; expenses, $16; balance in hand, $14 21.

HOWICK.—Thirty-nine members; subscriptions, $73; awarded in premiums, $117 50. Report defective.

MCGILLIVRAY.—Fifty-eight members; subscribing $1 each. No further report.

STANLEY.—Eighty members, subscribing $1 each. No further report.

Miscellaneous.

An English Dog Show.

At the late Birmingham Cattle and Poultry Show, there was one notable novelty,—an exhibition of Sporting and other Dogs. This feature of the Show is thus described by the *Times*:—

"Under the presidency of Lord Curzon and the management of an inflential committee, prizes of large amounts are competed for by some 300 dogs, in the Horse Repository of Messrs. Bretherton and Harrison. No such complete classification had ever been attempted before. Viewing the strange diversities in form, capability, and disposition of the dogs in this whining, growling, menagerie, we can scarcely admit the doctrine that the animals are varieties of one species, and that all have been developed by differences of food, circumstances, and training from a single original pair; or, as some say, are collectively a tamed derivation from the lean and savage wolf. In this gathering of all descriptions of hounds, for instance, what extraordinary differences are observable in the nature and uses of the several breeds. Whatever of swiftness in pursuit of nimble game, of miraculous keenness of scent for a hidden or flying enemy, of untiring patience of search, of lithe agility and enduring speed, may be required for hunting over the open field, across the deep flood, in the burrowed entrenchment or the recesses of the rock—in short, whatever excellencies and peculiar instincts are valuable in the mighty hounds that chase the antlered deer; in the keen, swift and sturdy hound that seeks the wily fox; in the slender, facile greyhound, all elegance and ease in rapid flight and leap; in the shaggy, half-amphibious otter hound; in the terrible bloodhound, with his pendent lip; in the clever pointer and careful retriever—all are illustrated by perfect and unusually fine examples among numbers of the highest superiority of breed. The bloodhounds form a very grand class, to which the Earl of Bagot contributes the most magnificent specimens, remarkable for their character of head and expression. The foxhounds would have been a larger class at any other season of the year. Viscount Curzon and Earl Grosvenor are the prize winners. Harriers and beagles are but few. The large rough-coated deerhounds make a fine show, each a seeming original of a Landseer picture. There are some specially fine greyhounds The large pointers are the principal class, most of them of great merit; and the small pointers, especially the bitch class, still more extraordinary—the Hon. H. W. Powys, Mr. J. S. Soresby, Mr. H. Gilbert, the Earl of Derby, and the Earl of Lichfield carrying off prizes. The English setters are highly thought of. The Irish setters are not so grand as a class, though the prize dogs are very fine. Some setters and spaniels, shown by Mr. Burdett, are considered unequalled. The retrievers are exceedingly good, Mr. Brailsford and Lord A. Paget winning the prizes. There is a good class of Clumber spaniels, used for cover shooting. Mr. Boales and Earl Spencer exhibit the most meritorious. Turning to the other division of the show, we have the majesty of the massive framed mastiff, ferocious as a tiger to strangers, sagacious "as a Christian" in detecting thievery and chicane, gentle as a lamb to the hand that feeds and loves him, and we have the weedy, slim Italian greyhound, in form suffering from internal and external stricture, yet all grace and tenderness; shivering at the end of a riband or a watch-chain, and incapable of stronger field exercise than the hunting of a guinea-pig. There is the nobility of the Newfoundland, with his colossal paw—humane savoir of wrecked mariners from the swallowing wave; and there is the antic loving toy terrier, ridiculous for its littleness, delighted to be caressed upon his lady's knee. There is the iron-jawed bulldog, with his stealthy spring and unrelenting grip, fierce, unflinching unto death; and there is the tiny spaniel, which loves to be nursed and dandled, or

peeps timidly out of the shelter of his mistress's muff. There is the active black and tan terrier, sworn enemy of all four-footed vermin; and there is the lazy, curly King Charles, in an ungainly state of plethora of good living, able to waddle after a comely dame or repose upon her handsome hearthrug. There is the homespun, plain, intelligent sheep-dog; and there are the grotesque, negro-featured pug, and the Skye-terrier, little like a ferret, and shaggy beyond recognition of head or tail. The mastiffs are a superb class; the black Newfoundland equally good; the bull-dogs repulsive, yet interesting from the very extravagance of sullen savageness and latent brutality in their expression, and for their well-known pluck prize-ring qualities. Sheep dogs are fairly represented; the terriers attractive and maintaining the credit of their order. One 'rough customer' of a Scotch terrier is indeed a marvel; he is said to weigh less than three pounds, yet is over two years old, and a day or two ago killed a fierce big rat, and his selling price is fifty guineas. One inimitably ugly pug, that as a lapdog would by contrast give charms to a gorgon, is priced at a thousand guineas. The Italian greyhounds and diminutive toy terriers of course attract most attention from the fair visitors. The Alpine mastiffs, St. Bernard dogs, an awful rough Russian terrier, the rare Maltese lion dogs, and the Esquimax fox dogs are also a source of great interest."

A Strange Pet.—Although Buffon was of opinion that the weasel was an animal incapable of domestication, we have the following interesting account of one in a letter of Mademoiselle de Laistre:—"If I pour some milk into my hands' says she, "It will drink a good deal; but if I do not pay it this compliment, it will scarcely take a drop. When it is satisfied it generally goes to sleep. My chamber is the place of its residence; and I have found a method of dispelling its strong odors, by perfumes. During day it sleeps inside a quilt, entering by a place that is unsewed in its edge, which it accidentally discovered. At night I keep it in a wired cage, which it always enters with much reluctance, but leaves with joy. If the servant sets it at liberty before I am up in the morning, after a thousand gambols, it comes into my bed, and reposes on my hand, or on my bosom. If I am up before it is let out, it will fly to me in rapture, and spend half an hour in caressing me, playing with my fingers, and nibbling at them with its teeth like a little dog, leaping on my head and on my neck, and then running round my arm with the softness and elegance of a squirrel."—*Cassel's Popular Natural History.*

The way to get Wealthy.—Never was money so scarce, everybody says, and everybody we believe, is justified in making the remark. Silver may be plentful in bank, gold may be abundant at Frazer River, but neither can be picked up along the streets by men too indolent to work, or women too extravagant to study economy. They will now discern that

'"Tis a very good world that we live in,
' To lend, or to spend, or to give in;
But to beg, or to borrow, or to get a man's own,
'Tis the very worst world that ever was known."

The proverb is an old one, but just as applicable to our times as those of our ancestors. Poverty has not much credit in bank parlors, though wealth is frequently less reliable, unless accompanied by honest principle. The only thing to be depended upon in these days is industry. That is the best financial institution. It never fails. Abstemiousness and frugality are the best bankers. They allow a handsome interest, and never dishonor a draft drawn on them by their humblest customers. That's our opinion of the matter.—*Old Jonathan*

The Horse in Arabia.—The horse is involved in the most ancient superstitions of the people of Arabia. They believe him to be endowed with a nature superior, not in degree only, but in kind, to that of other animals, and to have been framed by the Almighty with a special regard to the convenience of man, and the setting forth of his person. It is one of their old proverbs, that, after man, the most eminent creature is the horse; the best employment is that of rearing it; the most delightful posture is that of sitting on his back; and the most meritorious of domestic actions is that of feeding it. Mahomet himself did not disdain to inculcate a lesson of kindness towards the horse. "As many grains of barley," said he, "as are contained in the food we give to a horse, so many indulgences do we daily gain by giving it." The belief is widely spread that the best breeds are descended from five favorite mares of the prophet, on which he and his friends fled from Mecca to Medina.—*Cassell's Popular Natural History.*

Our Changing Climate.—The frequent changes of our uncertain climate give rise to many forms of disease, and we often murmur and repine at their suddenness. But there is a bright, as well as a dark side in all the ordinances of nature, and Washington Irving has painted the bright side of the fickle season in the following glowing terms:

"Here let me say a word in favor of those vicissitudes of our climate which are too often made the subject of exclusive repining. If they annoy us, they give us one of the most beautiful climates in the world. They give us the brilliant sunshine of the south of Europe, with the fresh verdure of the north. They float our summer sky with gorgeous tints of fleecy whiteness, and send down cooling showers to refresh the panting earth, and keep it green. Our seasons are

full of sublimity and beauty. Winter with us hath none of its proverbial gloom. It may have its howling winds and chilling frosts, and whirling snow storms, but it has also its long intervals of cloudless sunshine when the snow-clad earth gives redoubled brightness to the day, when at night the stars beam with intense lustre, or the moon floods the whole landscape with her most limpid radiance.

And the joyous outbreak of our spring, bursting at once into leaf and blossom, redundant with vegetation, and vociferous with life; and the splendor of summer, its morning voluptuousness and evening glory, its airy places of sun-lit clouds piled up in a deep azure sky; and its gusts of tempest of almost tropial grandeur, when the forked lightning and bellowing thunder volley from the battlements of heaven and shake the sultry atmosphere; and the sublime melancholy of our autumn, magnificent in its decay, withering down the pomp of the woodland country, yet reflecting back from its yellow forests the golden serenity of the sky. Truly we may well say that in our climate, "The heavens declare the glory of God, and the firmament showeth His handiwork. Day unto day uttereth speech, and night unto night showeth knowledge."

How the Bean Climbs the Pole.—Professor Brewer, of Washington College, Pa., communicates to the *American Journal of Science and Arts* the result of some experiments made by him on climbing vines—the hop, the Lima bean, and the morning glory. He finds that they will climb around a transparent glass pipe just as well as anything else, and that they are warmest in their embraces when the pole is warmer than the surrounding air. During the day, the vine is all attracted toward the light, but at night, especially on cool nights, it turns to the pole. He learned, also, that the color of the pole makes no difference; the caressing instinct of the vine has no prejudice against any shade. The element of constancy is very largely developed, the vine, after it has reached its pole, showing a much stronger tendency to wind around it than it did before to reach it.

Selection of Breeding Hogs.—What we western men consider the main point, is this:—We want a hog with a good constitution, and the hog with the best constitution is the one with the largest and most perfect lungs; for if they have large lungs they will be thick through the shoulders; and my word for it, if you get a hog with thick shoulders, you will have a hearty hog, and one that will fatten at any age. The hog should be thicker through the shoulders than through the hams.

On the contrary, a hog that is thicker through the hams than the shoulders has a poor constitution, and hardly ever fattens well, and should never be selected to breed from.

There are other points or qualities to be taken into consideration, viz., size and color; however, color is only a matter of fancy. I prefer a white hog. But the size required depends upon the uses that the pork is to be put to; for instance, if for family use, a hog that will net 200 lbs., at twelve or fifteen months old, is large enough. If for market, I would prefer a larger breed, viz., one that will net 300 to 350 pounds, at eighteen to twenty months old.—*Ohio Valley Farmer.*

Frogs.—Somebody who has watched the amphibous creatures, says in *Chambers' Journal* that male frogs make the most noise, being furnished for that purpose with a kind of bladder in the neck, or double action bag pipe; but then the voices of the females are the hoarsest and most aggravating. When, however, intent on doing the agreeable, they have another tone of voice—soft, sweet, and plaintive, like a bell heard in the stillness of a summer evening; from which some naturalists have inferred that it is only the married couples, and old maids and bachelors whose voices are so harsh and grating, the courting and honey-moon tones being pitched in a different key. Although frogs have no tailors' or milliner's bills, they follow the fashions in having a new suit every week or fortnight during the summer, and in casting off the old skin as frequently. They are admired as food not only by Frenchmen and gourmands, but by snakes, eels, pike, trout, aquatic birds, hawks, owls, moles, and weazles. Those most esteemed by epicures frequent deep, clear ponds, and are not easily caught by hand.

Cure for In-growing Nails.—It is stated by a correspondent of the *Medical and Surgical Journal*, that cauterization with hot tallow is an immediate cure for in-growing nails. He says,—"The patient on whom I first tried this was a young lady who had been unable to put on a shoe for several months, and decidedly the worst case I had ever seen. The disease had been of long standing. The edge of the nail was deeply undermined; the granulations formed a high ridge, partly covered with skin, and pus constantly oozing from the root of the nail; the whole toe was swollen, and extremely tender and painful. My mode of proceeding was this: I put a very small piece of tallow in a spoon and heated it over a lamp until it became very hot, and dropped two or three drops between the nail and granulations. The effect was magical. Pain and tenderness were at once relieved, and in a few days the granulations were all gone, the diseased parts dry and destitute of feeling, and the edge of the nail exposed so as to admit of being pared away without inconvenience. The cure was complete, and the trouble never returned. I have tried this plan repeatedly since, with the same satisfactory results. The operation causes little if any pain, if the tallow is properly heated."

CARE OF SEEDS.—Many sorts of seeds will continue good for several years, and retain their vegetative faculty, whereas others will not grow after they are one year old; this difference is in a great measure owing to their abounding more or less with oil, as also to the nature of the oil, and the texture of their outward covering. All seeds require some share of fresh air, to keep the germen in a healthy state; and, when the air is absolutely excluded, the vegetative quality of the seeds will soon be lost. But seeds will be longest of all preserved in the earth, provided they are buried so deep as to be beyond the influence of the sun and showers. The dry kinds of seeds are best kept in their pods or outer coverings. When seeds are gathered, it should always be done in dry weather, and it is an excellent plan to hang them up in bags in a dry room, so as not to deprive them of air. In the common method of sowing seeds, there are many kinds which require to be sown after they are ripe, and there many other which lie in the ground a year, sometimes two or three years, before the plants come up: hence, when seeds brought from distant countries are sown, the ground should not be disturbed, for at least two years, for fear of disturbing the young plants. In sending seeds from one country to another, great care is to be taken to preserve them from vermin, and preserve them dry, otherwise they will mould and decay. Various expedients have been restored to, to this end; but all seeds require some share of air to preserve their vegetating quality, a simple plan—where there is no other ready convenience—will be found to be, that of putting the seed into a bag, and hang it up in a dry place, or put it into a trunk, where there will be no vermin.—*N. Y. Mercury.*

Editorial Notices &c.

BLACKWOOD'S MAGAZINE FOR FEBRUARY.—THE EDINBURGH REVIEW FOR JANUARY.—Leonard Scott & Co, New York: H. Rowsell, Toronto.

We are in receipt of two excellent periodicals, just issued from the American press, within a week or two of their first appearance in Britain. *Blackwood* is more than ordinarily interesting this month, and the articles, School and College Life;—Spontaneous Generation;—The Transatlantic Telegraph, are of a very high order of merit, while there are others not perhaps less interesting and important. The new number of the *Edinburgh* is also above par in the interest and attractiveness of its articles. When all are so well done it is difficult to select; the beauty of these periodicals is that they embrace so wide a field in literature, politics, science, and art, that every body finds something suited to his taste and wants. Church expansion and Liturgical Review; The Victoria Bridge; Political Ballads of England and Scotland; Ocean Telegraphs; The Kingdom of Italy, may be mentioned among others as the topics most likely to interest general readers.

This is a seasonble time to commence subscribing to these unequalled periodicals, as new volumes have just commenced. The four Reviews and *Blackwood* can be obtained for the very low price of $10 a year. Each, however, can be procured separately.

TORONTO NURSERIES.

Fruit and Ornamental Trees, &c.

AS the season for transplanting Trees, &c; is approaching, I beg to call the attention of the public to my Large Stock of Fruit and Ornamental Trees, Flowering Shrubs, &c., comprised for the most part of the following Nursery productions, viz: *Apple Trees*, Standards and Dwarfs; *Pears*, Standards and Dwarfs; *Plums*, Standards and Dwarfs; *Cherries*, Standards and Dwarfs; *Peaches*; Nectarines; Apricots; Gooseberries, all the best English varieties; Currants of all the new kinds; Raspberries of all sorts; Strawberries, three varieties, including new sorts; Grape Vines, 12 Foreign varieties, grown in pots for Vineries, &c., and for out-door culture the following proved varieties, Diana, Concord, Delaware, Hartford-Prolific, Rebecca, Isabella, Clinton, and Catawba, with all the other new kinds highly recommended in American Catalogues; Rhubarb of all sorts, Asparagus, Sea-Kale, Horse-Radish, &c, &c. Also, upwards of 200 varieties of choice Hardy Roses, including many new varieties now on their way from England; 100 kinds of Dahlias, amongst which are some new ones imported this year; 40 varieties of Phloxes; 1000 Plants of Chinese Pæonies of 40 different kinds; a large collection of Flowering Herbaceous Plants; and 1000 Plants *Dielytra Spectabilis*, the FINEST Hardy Herbaceous plant in cultivation. The following Hedge plants are cultivated largely:—Buckthorn—the best Hedge plant for Canada—White Cedar, Red Cedar, Hemlock, Privet, Barberry and Tartarian Honeysuckle. The Ornamental Tree department will not be found wanting in any particular.

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Toronto Nurseries, March 1st, 1861.

P. S.—BEWARE of *American Tree Agents*, who sell *inferior* stuff, at *higher* prices than Canadian Nurserymen. All Agents for *these* Nurseries have my signature to a certificate to that effect.

3t

To Subscribers.—We occasionally receive and hear of complaints from parties who were in receipt of the *Agriculturist* last year, that they have not received the paper this year, when in fact they had not ordered it to be continued. To all such we beg to repeat what we have several times already stated, that we stop all papers without distinction at the end of the year; and do not forward them again till we receive the order to do so. Any other system would not answer with a paper published at the very low price of the *Agriculturist*. We have still plenty of back numbers on hand of this year.

The Agriculturist for 1861.

The *Agriculturist* is published semi-monthly, each number consisting of 32 pages, and forming a volume of 768 pages.

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Board of Agriculture
Toronto, January 1861.

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Or Journal and Transactions of the Board of Agriculture of Upper Canada,

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JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

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The Culture of the Vetch.

The vetch, or tare, (*Vicia Sativa*) constitutes in several European countries one of the most valuable and extensively cultivated of the leguminous forage-plants. It is annual, indigenous and hardy, and comprises several varieties, all of which possess properties more or less adapted to the wants of the farmer. We have received several enquiries respecting this class of plants, and its adaptation to the climate and farming of Canada.

Several varieties are cultivated in Germany and other European countries, but in the British Islands, where this crop extensively prevails, the winter and spring varieties only are much sought after. These two are precisely of the same species, and do not even constitute botanical varieties; and their different habits have been acquired from the practice of sowing one in the fall and the other in the spring. From the different habits they have acquired, it is of the greatest importance, even in the moderate climate of England, that they should be sown at the periods to which they are respectively suited; for if the spring variety be sown in the fall, the early winter frosts would injure or destroy it. Much caution is required in this respect, as it is impossible to distinguish between the two kinds of seed from external appearance. In this country the winter variety would have, we fear, no chance whatever; for in case the snow should protect it through the coldest months of winter, the severe night frosts which always occur after the snow is gone, would be sure to destroy it. The spring variety, therefore, is the only one adapted to the climate of Canada.

We are not, perhaps, in possession of sufficient information to say absolutely that the cultivation of the spring vetch could be profitably carried on as a general crop, to any great extent, in this Province. The vetch naturally does best in a warm and moist spring, and the sooner it can be got to cover and shade the ground the better; and the crop will always more or less depend on the vigour of its early growth. A cold, dry spring is consequently very unsuitable. From the little we have seen and heard of the cultivation of the tare, when properly treated, we are inclined to form a favourable opinion; certainly the matter is well worth a fair trial, and we shall be happy to hear from such of our readers as have had practica experience in it. In the meanwhile, we offer the remarks that follow.

A rich clay loam is the best adapted to the culture of the vetch; although it will succeed either on lighter or heavier lands, if liberally treated. It is best to manure the ground in the fall, and plough it in a good depth, carefully furrowing the land to keep it dry, which will be found highly advantageous in spring; when it should receive another ploughing and harrowing, to obtain a good tilth for the seed bed. The spring ploughing may be dispensed with

if the operation has been well performed in the fall, and a heavy cultivator substituted; but a new prepared seed bed is of primary importance. It is also of importance to sow the tare as soon as the state of the land and weather will admit; say in this climate about the middle of April; but this operation cannot be regulated by the day of the month. Late sown tares, however, will seldom succeed, unless the soil be in excellent order, and the season prove particularly favourable. If sown broadcast for forage, 2½ to 3 bshls. per acre will be required; if for seed, a less quantity will suffice. If the seed be small, and the ground rich, and in good tilth, the quantity may be diminished; but in crops of this sort it is the best policy to sow plenty of seed. The plants should be sufficiently thick to cover the ground, and thus prevent the growth of weeds, which are often very troublesome among these kinds of crops, when too thin; and they should not be attempted but upon land that is comparatively rich and clean.

If the season should prove moist, and the before-mentioned conditions observed, the crop will come to cut before clover is ready, and a second mowing may be obtained; and, sometimes, even after that another slight growth may be obtained, in time to be ploughed in for winter wheat, for which in heavy lands tares are an excellent preparation. In this way abundance of forage may be obtained for soiling stock during the summer months, naked fallow dispensed with, the land manured and kept free from weeds, and well prepared for our staple article—fall wheat. Tares make excellent hay, but being so very succulent the operation of saving is somewhat difficult and tedious, except in dry, hot weather. They should be cut when coming into pod, and if left a little later they will make excellent winter fodder for sheep. Unless they are left for seed, this crop takes comparatively little from the soil, and returns to it if properly managed, much that is valuable; being, in this respect, very different to most other spring crops.

All the animals of the farm are fond of this legume, either in its green or dried state, and all thrive upon it in an eminent degree. Hogs may be entirely fattened upon it. It is suited to milch-cows, causing them to give more butter than most kinds of food; and it is extensively used for horses. In addition to their value as green forage, tares, when well made into hay, are regularly relished by all kinds of the domesticated animals, particularly sheep; and are, therefore, well worthy to receive a fair and extensive trial in this country, as a rotating and ameliorating crop, assisting the farmer to sustain his live stock through the greater portion of the year in a thriving and healthy condition.

The Past, Present, and Future of British Agriculture.

The above subject was introduced at the first meeting of the London Farmers' Club, February 11th, by Mr. Alderman Mechi, whose paper evinces his usual industry and zeal in the cause of Agricultural improvement. We think that this paper will be interesting and suggestive to most of our readers, and shall therefore give portions of it in succeeding numbers of this Journal. Mr. Mechi's style will not admit of abridgement, even were that desirable. We do not know where to look for so much valuable and interesting information on the history and progress of British Agriculture, upon which our own is mainly founded, as is contained in this cleverly compiled essay:—

B.C. to A.D. 450.—If this country were without towns, cities, or roads, trade, commerce, or manufactures, and if the population were, consequently, solely agricultural, it would evidently be unnecessary to produce more corn or meat than would supply their own families, their lords, warriors, governors, clergy, and dependants. Pasture, wood, and waste would abound; and, as there would be no use for money, the proprietors of land would receive for their almost worthless acres, personal services or a portion of the produce. Such was, in fact, the condition of Britain when, 55 years B.C., the Romans, under Julius Cæsar landed in Kent, and ultimately conquered nearly the whole of South and Mid Britain, which they colonized and partially civilized, giving to the natives municipal institutions—a pretty good proof that in South and Mid Britain we were not so savage and barbarous a race as has been by some represented. It is true that the North Britons were more fierce, barbarous, and warlike than those of the South; and that our cannie friends over the border were then, as now, determined to come South in search of the "loaves and fishes;" for, in spite of high walls and fortresses, the Romans could

only partially check the inroads of the Picts and Scots. The Britons of that remote period were evidently agriculturists, having herds and flocks; and also, in Southern districts, growing corn, the roofs of their wooden houses being thatched with straw. They also made hay, for the wheels of their war-chariots had scythe blades attached to them; and having chariots, they must have understood making wheels. Although we have no authentic records before the time of the Romans, there is sufficient evidence to show that Britain had for many centuries carried on a trade with the Phœnicians, who coveted the produce of her mines; and, in fact, the Belgians had partially colonised the South-eastern coast. No doubt the agriculturists of that day had their Webbs, Bakewells, and Collings; but they had no oilcake, turnips, or clover, to carry them through the winter. Having no Manchester manufacturers as their customers or suppliers, the ancient Britons depended principally upon nature for their clothing, in the shape of furs and skins obtained by their skill as hunters in the extensive forests and copices, or from the skins of their sheep and goats. Probably their nobles or Druids in the Southern Districts were clad with felted cloth. They grew woad, and used it for staining their bodies. The Britons appear to have been a noble and finely developed race, as might naturally be expected from their happy climate and fertile soil; and it can be no flattery to our British women to say that their personal charms and virtues have, from the earliest recorded period, exercised a most salutary influence on our race and welfare, for we find every powerful nation, from the Romans to the Normans, intermarrying with our British women; and we have no record of the introduction of foreign women into this happy country. Strangely enough I might quote my own case in proof of my argument, for my father was a Roman, and my grandfather a Saxon—my mother and grandmother being both English. One thousand five hundred years ago, Britain had possessed for more than three centuries nearly the whole of the Roman civilization, such as personal security—and, after payment of Roman taxes, security of property—arts and letters, elegant and commodious buildings, and roads to which no roads they have had since can bear comparison, except our present railways. It is easy to imagine that under such circumstances, and with the instruction and encouragement imparted by Roman civilization, British Agriculture improved and flourished, and not only supplied its own inhabitants, but exported corn to Rome. The Romans were compelled by their domestic troubles finally to abandon Britain, A.D., 449.

449 to 1066—*Now commenced the Dark or Middle Age.* The Picts and Scots ravaged the South country, and the divided Britons, unable to cope with their fierce and barbarous enemies, called to their aid the Saxons. These wild, warlike, and pagan people liked the country so well that they speedily sent for their countrymen, and eventually became masters of Britain; having, however, to sustain frequent and bloody wars with the piratical Danes, who occasionally overran portions of the country. Agriculture thus fared badly for several centuries, and we can easily believe Adam Smith, who says, "When the German and Scythian nations overran the Western provinces of the Roman empire, the confusions which followed so great a revolution lasted for several centuries. The rapine and violence which the barbarians exercised against the ancient inhabitants interrupted the commerce between the towns and the country. The towns were deserted, and the country left uncultivated; and the western provinces of Europe, which had enjoyed a considerable degree of opulence under the Roman empire, sank into the lowest state of poverty and barbarism. During the continuance of those confusions, the chiefs and principal leaders of those nations acquired or usurped to themselves the greater part of the lands of those countries. A great part of them was uncultivated; but no part of them, whether cultivated or uncultivated, was left without a proprietor. All of them were engrossed, and the greater part by a few great proprietors. This original engrossing of uncultivated lands, though a great, might have been but a transitory evil. They might soon have been divided again and broke into small parcels, either by succession or by alienation. The law of primogeniture hindered them from being divided by succession; the introduction of entails prevented their being broken into small parcels by alienation. But when land was considered as the means, not of subsistence merely, but of power and protection, it was thought better that it should descend undivided to one. In those disorderly times, every great landlord was a sort of petty prince. His tenants were his subjects. He was their judge; and in some respects their legislator in peace, and their leader in war. He made war according to his own discretion—frequently against his neighbors, and sometimes against his sovereign." When, however, they became, by admixture of race, Anglo-Saxons and christianized, a great improvement gradually took place. They no longer sold their wives and daughters as slaves, and they appear to have been possessed of the most of the usual live stock and implements of ancient agriculture. Murrain and famine alternately diminished their live stock and population, much as it does now in ignorant and pagan nations; and one-fifth of their herds perished every winter from exposure and want of food. The wool of the sheep was valued at two-fifths of the price of the whole sheep.

A.D. 866.—In King Ethelred's time the following prices were fixed by law: A man or

slave 20s., horse 30s., mare or colt 20s., ass or mule 12s., cow 5s., ox 6s., swine 1s. 3d., sheep 1s., goat 2d. The lands belonging to the Church were, generally, the best cultivated. The monks themselves engaged in the labours of the field as a means of support. Then, as now, the superior education, and consequent intelligence, of our clergy enabled them to improve agriculture.

1066 to 1400.—In the eleventh century William the Norman conquered England, and the foreign knights and others who accompanied him, or who afterwards settled here, made many improvements in horticulture and agriculture. They were, however, great game preservers, and their forest laws for its preservation were severe in the extreme. They delighted in the chase, planted the New Forest, and converted many extensive tracts of country into woodland as shelter for their game. Their ruined castles abound in Essex and Suffolk. Within three miles of Tiptree Hall is a fine specimen of their architecture, called Layer Marney tower—the adjoining church containing effiges of the Layer Marney family. As a rule they selected good land. The population was now estimated at about two millions. The drainage of the fens of Cambridge and Lincolnshire were commenced at this period, A.D. 1220. Our Scotch friends were considered behind us in farming. Essex was one vast forest, and stood foremost in Domesday Book for its number of pigs, which there found their food under oak and beech trees—the number was 92,991—Hertfordshire having only 30,705. A great many goats were kept as stock; and, even now, very old men tell me of the fierce she-goats which rushed out upon them, some eighty years since, when Tiptree Heath was a wild and wooded waste. Lords of the manor had considerable privileges. They monopolized all the water-mills; their tenants were compelled to send their corn to be ground. The Lord of the manor monopolized also the privileges of baking his tenant's bread at the common "fourne." Windmills were not known in England until about 1150. The shoeing of horses with iron is not supposed to have been used before the Conquest. Horses were rarely used in agriculture. As there is much discussion now about wearing beards, it may be interesting to know that our laity all wore beards until the Norman Conquest; so I suppose the Normans cropped as well as conquered us. They were, themselves, close shaved or croppen, for the spies reported to King Harold that they had whole regiments of priests, inferring from the practice of our then clergy that close cropping and priestcraft were synonymous; our agriculturists will, therefore, be justified by precedent in discarding their razors. Landowners were not without their troubles; for in the reign of Edward II. (1307,) the estate of the elder Spenser, in Suffolk, was ravaged by his enemies, who carried off 28,000 sheep, 1,000 oxen and heifers, 1,200 cows with their calves for two years, 500 cart horses, and 3,000 hogs. In 1317 harvest was all gathered by the 1st September, and wheat fell to one-twelfth of the price at which it had been sold a few weeks previously. The fluctuations in the price of corn seem to have been much greater formerly than of late years. In 1202 and 1223 it was 12s. per quarter, 1237 3s. 4d., 1243 and 1244 2s., 1246 16s., 1257 24s., 1258 20s., 1270 96s., and also £6 8s., 1286 2s. 8d. and also 16s. Considering the high value of money at those periods, it is easy to imagine what suffering, starvation and disease must have followed the years of scarcity. Such enormous fluctuations could only arise from a concurrence of other evils with an unpropitious season, such as invasion, civil war and rebellion, from which, thank God, we are now exempt; and we ought highly to prize the blessings of good government and good laws, well administered, which we now enjoy. Much of our progress is founded on a conviction that life, and property, and liberty, are secure in this happy country. Farmers are no longer called villains and churls, subject at any moment to do military or other service, at the command of their lords; nor have they to guard their flocks and property against the thousands of robbers and murderers who formerly infested this country. The proportion of pasture land to arable gradually decreased, but was still as twenty to one. The steward of the manor (Hawsted, in Suffolk) kept the manorial and farm stock accounts *in Latin.* This would now puzzle some of our modern stewards.

A.D. 1400 to 1480.—During this period our flock-masters must have improved the quality of their wool, "the cheap and principal commodity of the realm," for it was highly esteemed abroad, and the demand exceeded the supply. I presume the mutton was also improved, and that the animals were better fed, for in former times sheep were kept for their wool only. "Villains" were gradually emancipated, and became free labourers, and a new class of cultivators arose, paying money rents. At the Hawstead Manor Farm, Suffolk (Sir T. Cullum's) the produce of sixty-one acres of wheat for three years was two hundred and ten quarters, about nine bushels per acre, and, as the price was low, this was no doubt a good crop, and certainly the farming would be quite equal to or above the average. The quantity of seed sown was two-and-a-half bushels, so that the return was hardly four to one. The produce of the different grains at that period, on that farm, was—wheat 8 bushels, barley 12, peas 12, and oats 6—a very small return for for the quantity of seed sown, and something like what is now grown in many foreign countries that supply our market. In the fifteenth century much arable land was laid down to pasture, on account of the high price of wool, and also because of the scarcity of labour. The

villains having been made free labourers, betook themselves to handicrafts and manufactures. Land appears to have been let still at cheap rates, say 4d. to 8d. an acre, and it must have been of a fair average quality, as it was on Sir Thomas Cullum's estate, in Suffolk; in fact, in 1400, the Abbot of Bury, Suffolk, let eighteen acres of pasture, on a lease of eighty years, for 4½d. per acre. Landlords reserved to themselves the right of immediate re-entry if the rents were not punctually paid. As to wages at that time, a bailiff received 25s. a year, besides meat and drink, and 5s. a year for clothing. A chief hind, carter, or shepherd, 20s., and for clothing, 4s.; a woman-servant, 10s., with 4s. for clothing; a commou labourer, 15s., and 3s. 4d. for clothing; and he seems to have been left to provide his own diet. In harvest, wages were higher, say 4d. with meat and drink, or 6d. if he provided for himself; a reaper or carter 3d. with, and 5d. without, provisions; a woman, 2½d. with or 4½d. without. These wages were fixed by statute, but still labourers became scarce. Cotteswold wool was in great demand by the Flemings, Venetians, and others, for the manufacture of fine cloths; and it is said that Cotteswold sheep, being sent to Spain, produced—as a result, I presume, by a cross—the celebrated Merino. We had not at that time learned the art of working up our fine wool at home; we were at this period, exporters of grain to foreign parts, and a law was passed to compel boroughs, towns, &c., to provide a standard bushel measure. The use of coal became now more general. How oddly this sounds to us, who know that last year the consumption of the twenty-one miles circle around London was 5,000,000 tons, of which 1,500,000 tons came by rail.

1408 to 1608.—During this period a large advance was made on our agricultural condition. Farmers passed from wooden trenchers and wooden spoons to pewter, and even in some cases to silver. Their straw pallet was exchanged for a feather bed, and their rents were doubled. The softer sex also found their condition ameliorated. All this took place concurrently with, and as a corollary to, our progress in manufactures and commerce.

Comfort for the British Landowner.—Adam Smith says, in his "Wealth of nations:" "Every improvement in the circumstances of society tends, either directly or indirectly, to raise the real rent of land; to increase the real wealth of the landlord—his power of purchasing the labour, or the produce of the labour, of other people. The extension of improvement and cultivation tends to raise it directly. The landlord's share of the produce necessarily increases with the increase of the produce. That rise in the real price of those parts of the rude produce of land which is first the effect of extended improvement and cultivation, and afterwards the cause of their being still further extended (the rise in the price of cattle, for example), tends, too, to raise the rent of land directly, and in a still greater proportion. The real value of the landlord's share—his real command of the labour of other people—not only rises with the real value of the produce, but the proportion of his share to the whole produce rises with it. All those improvements in the productive powers of labour which tend directly to reduce the rent-price of manufacturers, tend directly to raise the real rent of land. Every increase in the real wealth of society, every increase in the quantity of useful labour employed within it, tends indirectly to raise the real rent of land. The contrary circumstances—the neglect of cultivation and improvement, the fall in the real price of any part of the rude produce of the land, the rise in the real price of manufactures, from the decay of manufacturing art and industry, the declension of the real wealth of society—all tend, on the other hand, to lower the real rent of land, to reduce the real wealth of the landlord, to diminish his power of purchasing either the labour or the produce of the labour of other people.

(To be continued.)

Salt as Manure, Green Crops as Manure, &c., &c.

Editor of the Agriculturist.—Can you or any of your correspondents answer the following questions:

Has common salt been tried as a top dressing to wheat in Canada? If so, in what quantity per acre and with what result?

Has its specific action been ascertained? I observe Mr. Hind, in his prize essay on the midge, seems to think that it acts beneficially by fixing the ammonia of the atmosphere. Is this a sufficient reason for the great increase of five bushels of wheat per acre which he mentions as having been produced by the application of one bushel and a half of salt to five acres of land? See page 125 of Essay.

Is there any more convenient crop than buckwheat for green manuring? I sowed a few acres of it the middle of July, under the impression that it would be ready to plough down after the harvest. The plant, however, grew so rank that I could find no one able to devise a method to turn it under; and after exhausting every suggestion, I had to mow and lead it into the fold yard. Are there fast growing grasses that would answer the purpose?

What would be the best mixture of clover and grass seeds to sow with a grain crop for the purpose of being depastured the following year only?

Where can I get a two-horse cultivator, simple in construction, and one that a blacksmith could mend in case of accident, and at such a price that a person having a hundred acre farm could

buy? I think if a page of your journal was set apart to delineate and describe good and really useful implements adapted to the use of the million it would be a boon. I find nothing more difficult to obtain than information where such things are to be had.

Would it be inconsistent with your arrangements to give your readers a more detailed account of Dr. Voelcker's investigations into the preparation, management, and application of manures, a brief notice of which you took in one of your late numbers. It would appear from what you stated then that a great misapprehension exists among those who are considerd good practical farmers as to the mode of applying manure. If Dr. Voelcker has found the true law it cannot be too generally promulged, and let us be done with empiricism as soon as possible; surely the trite observation that the agricultural mind moves very slowly seems to find corroboration, if it be the case, notwithstanding that the art of culture has been practiced since the days when Adam delved till the present time, we are not yet acquainted with the proper method of putting on the muck. I am, &c.,

CALEDON.

REMARKS.

The great benefits of salt to agriculture anticipated several years ago in England, by the sanguine imagination of Mr. Parkes, the author of "The Chemical Catehcism," subsequent experience has not confirmed. The action of salt as applied to cultivated crops is very variable, and by no means to be depended on, except in particular seasons, soils, &c. It is found generally, particularly when applied with lime, to brighten and stiffen the straw, cause the ear to fill with clean, plump grain, and to expedite the progress of the crop towards maturity. Whether the whole of the increase of the wheat to which our correspondent alludes, is to be attributed to the salt applied, may fairly admit of a question. It may, however, in some degree, fix ammonia and arrest the progress of mildew and rust. Salt may be used advantageously in this country in composts and farm yard manure. We are not aware whether our farmers use it as a top-dressing for wheat; if so, some, perhaps, will have the goodness to inform us of the results.

The reason our correspondent did not succeed with the buckwheat appears simply to have been that he allowed it to get too great a growth before ploughing it under. Buckwheat answers well for this purpose, especially on light lands; other plants may be used, such as oats, millet, Indian corn, &c. There is no crop answers better to plough under for improving the land than clover, although of course it cannot be employed with the same readiness as a summer crop.

As to mixture of grass seeds, there is so little sown in this country besides timothy and clover that we have scarcely any results to report upon. We think our correspondent might try orchard grass along with timothy and clover and a little white and alciter clover. A notice of "Orchard," or Rough Cock's foot grass will be found in the *Agriculturist* of 1860, page 250. It is of early growth, and produces a great deal of pasturage, and also of fog or aftermath. It requires to be cropped down pretty close, or it becomes coarse and rank in growth.

Of two-horse cultivators, there were twenty-two exhibiters at the last Provincial Exhibition. Those who took prizes were Messrs. S. Eckardt, Markham; George Robinson, Markham; J. W. McLaren, Lowville. The other manufacturers reside in nearly every quarter of the Province. We do not doubt that our correspondent can procure such an implement as he requires from some of them, at a reasonable price, say $12 to $20. We shall be happy to insert notices and descriptions of useful implements if the manufacturers will send them to us.

We shall endeavour to comply with our correspondent's wishes in regard to Dr. Voelcker's investigations into the principles of manuring in a future number.

[The above letter and remarks were accidentally omitted from our last number.]

Characteristics of "Fife" Spring Wheat.

From the Country Gentleman and Cultivator.

This variety of what has been grown extensively the last three seasons in the west and northwest, and proves to be so valuable, that I think every wheat cultivator in the United States is, or may be, interested in knowing something more about its habits and qualities, than has yet come under the public notice; at least so far as I am aware, from considerable agricultural reading. Though to some, its name might so imply, this wheat is *not* of Scotch origin—does not get its name from the county of Fife, but from the name of its originator, Mr. David Fife, of Otonabee, C. W., who saved a few roots of a

winter variety that he obtained from Dantzic, via Scotland, I believe, and subsequently cultivated the produce as a *spring* wheat.* I will say after thirty years experience in wheat culture —that I have seen no variety of spring wheat that contained so many useful qualities, and therefore so widely adaptable, as the Canada Fife in Wisconsin. It is very hardy, and therefore less liable to rust or mildew and other diseases than other known varieties. It is later than Canada Club, and does *not* ripen off so *rapidly;* it therefore is more conveniently and economically harvested, particularly as it has the great advantage of shelling or beating out with difficulty; the crop, even when dead ripe, being *comparatively* free from loss, therefore, in cradling, reaping, or other harvesting routine. It grows a few inches taller than Club; about as stiff, which is quite strong in the straw, and consequently stands up well, not lodging except at very rich situations.

This Fife wheat threshes easy *enough*, and is much less *cut* or *broken* by the horse machines than club or Rio Grande. Indeed, my Fife was not broken in threshing, while the club was, to a considerable extent; and the Rio Grande, in my vicinity, more so it seems. This shows the berry of the Fife to be comparatively and literally compact and very firm, or when dry, even hard, which I infer must give it better keeping or storing qualities than those of more tender varieties.

A year or two ago, before it was generally known; and when, therefore, its merits were not well understood, its broad and hardy qualities led the millers to look well to their grinding apparatus, as they found it required edge and grit, and more than common power to flour it *well*. Hence they gave it a gritty reputation. But Club failed so fast the last few years on the Wisconsin prairies (which by the by, are to within two miles of my house, as fine as any in the U. S.) that Fife rapidly superceded it; so that now there are probably three acres of Fife to one of Club raised. Now, therefore, the Fife variety is well known, particularly in this State and adjacent wheat districts. Its quality, though not changed, is now much better appreciated. Instead of there being more grit in it than in the long known Club, it now turns out that its flour is *eqally* good as the flour of Club itself, in which it approaches therefore, to within twenty-five or thirty per cent. per barrel, in quality and value to the flour of winter wheat. Our better informed producers, now, therefore, sell Fife and Club at the same prices, and these usually rate only five or six cents a bushel less than winter wheat commands, or rather formerly sold for; I say *formerly*, for I have *not* seen a field of winter wheat this year.

I know of many instances, too, in which Fife has yielded three to five bushels per acre *more* than Club, both this season and last. In all this I am saying nothing in depreciation of the good old Club, where this has shown no symptoms of decline. But in Wiconsin, Club has extensively exhibited a declining tendency in a variety of particulars, which, as they may not have befallen it elsewhere, I need not detail.

On the whole, Fife wheat—in consistency with its recent origin from a fall variety—comes so near in hardiness, productiveness, and other economical qualities to winter wheat, that in localities where the latter is precarious or uncertain, in any considerable degree, I should prefer to replace it with spring Fife; the difference in the value of produce being much less in such circumstances, than the anxieties and losses incident to a precarious crop. Last year the Fife with me yielded 26 bushels per acre; this year thirty-six. This year, is not a criterion however, the season having been so unusually good *for wheat*. But I have no doubt I can make the Fife yield twenty-four or five bushels per acre one year with another, and I need therefore say no more in recommendation of a sort so evidently *nearly* right. J. W. Clarke.

Marquette, Wis., Oct. 16.

* This account of the origin of the Fife wheat does not agree with a statement published in the *Co., Gent.*, vol. 13, p. 237, by Mr. George Esson, a neighbor of Mr. Fife's at Otonabee. Mr. Esson says:

"About the year 1842, Mr. David Fife, of Otonabee, C. W., procured through a friend in Glasgow, Scotland, a quantity of wheat which had been obtained from a cargo direct from Dantzic. As it came to hand just before spring seed time, and not knowing whether it was a fall or spring variety, Mr. Fife concluded to sow a part of it that spring, and wait for the result. It proved to be fall wheat, as it never ripened, except three ears, which grew apparently from a single grain; these were preserved, and although sowed the next year under very unfavorable circumstances, being quite late, and in a shady place, it proved at harvest to be entirely free from rust, when all wheat in the neighborhood was badly rusted. The produce of this was carefully preserved, and from it sprung the variety of wheat known over Canada and the Northern States, by the different names of Fife, Scotch and Glasgow. As the facts occrured in my immediate neighborhood, and being intimately acquainted not only with the introducer, but with the circumstances, I can vouch for the correctness of the statement, and if necessary produce incontestible proof."

Manure.

Editor Canadian Agriculturist,—No doubt you rejoice that this word manure is beginning to be looked upon by farmers as of a talismanic character. Its importance is beginning to be

fully estimated in political circles; the Kingston *Daily News* devotes an occasional article to the subject, and why not? Has not Zoroaster said that "the fairest fruit of man is to till the ground."

While admitting the value of superphosphates and guanos, let us see how far our own manurial resources may be developed before we set about importation. The manufacture of potash in many parts of Canada, has led to the formation of large mounds of leached ashes. In an area of three miles I have counted 22 heaps, containing more than 22,000 bushels. These valued at one cent a bushel, would be worth $220; but they are worth to the farmer five cents a bushel, making the lot worth $1100. It is a fact, that Americans have manufactured potash from the leached ashes sold by manufacturers on this side; they have paid for them four cents a bushel by the cargo put them in a dry place, mixed them with lime to decompose any insoluble matters found in combination with the potash—for instance the silicate—and then manufactured potash. These leached ashes were then sold to farmers at from one to three cents a bushel. Unleached house ashes made from maple and beech contain to the bushel about 4 lbs. pure potash, manufactured in the ordniary way, and I am sure that full 50 per cent more of alkali is obtained from them when incorporated with soil; the application of well saved wood ashes will be found to fulfill all that is done by salt, while they are cheaper. Leached ashes, if previously spread under cover to evaporate from them the large amount of water they contain, would be found better than muck as an absorbent for manure pits. It would pay farmers to draw them in winter time from a considerable distance; and in localities where a good clearance has been effected we would advise them to resist the importunities of the ash-gatherer, and put their ashes on fields intended for spring wheat some time before sowing.

Another source of manure to which attention has not been directed in Upper Canada, is our fisheries. Large quantities of white fish and herring are annually caught on the Bay Quinte, the Lake-shore of Prince Edward, and on Lake Erie. What becomes of the offal? What is done with the immense hauls of suckers that disgust the fishermen in search of better fish? Now, guano is nothing more than fish—less so much of it as has been assimilated by birds; and if we may obtain in a cheap form nearer home all the elements of guano, no necessity exists for its import. Mr. Sterry Hunt, in an article published in Nos. 9 and 10, vol. II., of the Lower Canada *Farmers' Journal* called attention to the importance of manufacturing a portable manure from the refuse of the fisheries in the Lower St. Lawrence. Two French gentlemen have erected a large establishment on the coast of Newfoundland, for the manufacture of a manure from the refuse of the fisheries, the value of which Mr. Hunt estimates at $40 a ton. Will some of your readers who reside near a lake fishery give this information and thoughts on the subject.

By the way, Mr. Editor, in No. 1 of the present volume, you gave an extract from the *Working Farmer* on the value of carrots, in which it is said that a large portion of their inorganic constituents find their way back to the soil in a progressed form, *i. e.*, when the carrots are fed upon the farm; and that this progressed condition induces a consequent progression in the organic matters of the soil itself. Do you indorse this theory of the progression of primaries first promulgated by Prof. Mapes, of superphosphatic speculation notoriety. If there be any truth in the theory let its data be known; in agriculture we want facts, not assumptions. I have read somewhere of humate of lime; Leibig denies the formation of such a salt.

J. B.

Camden East, March, 1861.

Irish Agriculture.

If there be one thing more than another in which this age prides itself, it is the attention to the daily practical wants of mankind, and to providing of new sources of industry for the increasing wants of an accumulating population, by the discovery and cultivation of new fields of industry. And assuredly it may well boast of triumphs like these; for they are but the fulfilment of the great religious duty of labor—*Laborare est orare.*

Nowhere is the application of practical knowledge to the daily wants of life more imperatively demanded than in this country, placed, until recently, on the outer confines of civilization, in a semi-barbarous and simple state, its population subsisting, not on industry directed by science and skill, but on the simplest forms of rural pastoral labor. But invaded and surrounded by an advancing civilization, the people of this country could not always exist in a pastoral state, and the last dozen years must have warned them, often painfully, that Providence demanded a higher exercise of industry than milking cows and digging potatoes. There never existed a nation who were taught this lesson in a more memorable manner than the Irish. Yet we are even now only awakening to an elementary idea of our duties and necessities. We follow still "the old rate," with the proverbial tenacity of the Celtic character. But we must abandon some little time or other the "Paddy-go-easy" life of the country. That is not the life for which men were made. They are made to live together in close society, and not in selfish isolation, and thus their true state is best promoted by skilled industry.

Now, of all forms of skilled industry, that

which exercises itself on any "raw-material," and brings it from the raw to the finished manufactured state, is that form or "mission" of industry which creates most wealth, gives more extended employment, and confers most individual happiness. Except in one northern corner of the country, it has never been practically known to the Irish people. They have heard of it; they have seen and enjoyed some of its wonderful fruits, but they have been utter strangers to its value as a source of wealth, progress, and individual independence and happiness. Except in and around Belfast, the people are still employed in the simple, pastoral, and semi-barbarous habibts of *mitking cows and digging potatoes.*

But this simple form of industry must give way ultimately. It is not sufficient to meet men's wants, nor does it promote civilization.

Butter, meat, potatoes, corn—though valuable products of the soil—are yet not "raw-materials," which admit of being passed through a variety of stages and operations, employing many hands and diffusing much individual prosperity. Their product is simple, we may almost say rude; still, on these sources of industry alone is Ireland still dependant.

There is hidden in her soil a mine of gold, richer than any Australian gold-field, and that is the capacity of her soil to produce flax, a plant not inferior to silk in its value as a "raw-material" for the exercise of human industry. If Ireland but knew the value of this simple and graceful plant, she would leave to other regions to supply her under the provisions of free-trade, with the common necessaries of life, and apply herself to supplying the world with linen fabrics. Instead of a landscape of potato gardens narrow in their industrial resources, emblematic of a semi- barbarous state of society, the eye would be delighted with the prospect of fields waving with a flaxen harvest, destined to cover the tables and couches of the civilized world with the fairest fabrics, and give daily occupation and bread to millions of civilized men.—*Cork Reporter.*

The Census—Agricultural Products of Canada.

Editors Canadian Agriculturist.—I suppose that the census of Canada for 1861, is now taken, and will soon be returned, and laid open to inspection, to show the British public what amount of population we possess—what wealth we have—and how we gain a living generally; but I am sorry to say, that they will be led sadly astray, as to the industrial resources of Western Canada, as I will presently show you. In the enumeration of means of subsistence, there are eight important items not mentioned, that is omitted, and for which no columns are provided. They are as follows: pot and pearl ashes, staves, pipes, and West India squared timber, saw logs, cord wood, poultry, mutton, and lastly bees. Our township of Raleigh, in Kent, is one of the smallest in the west; when the marshy plains are deducted from its full area, containg only about 662 families, and yet the amount of the above eight articles will show as follows:

Pot and pearl ashes, 145 barrels, at $35 00 per bbl.	$5,075 00
Staves of both kinds, average in five years.	7,000 00
Square timber, mostly white oak, average in five years.	4,000 00
Saw-logs 23,000 pieces, averaging $1 25.	2,875 00
Cord-wood, 2,500 cords at $1 25 per cord.	3,125 00
Poultry—geese, ducks, chickens, eggs, and feathers.	6,620 00
Mutton—1,200 sheep and lambs, sold or eaten at $3 00 each	3,600 00
Bees—225 hives, swarms, and honey $5 00 each.	1,125 00
Total annual income.	$33,420 00

I have consulted with some of the most experienced and most thorough farmers of the township, likewise the enumerators, and arrived at the above totals as the lowest ones possible, each one being in some seasons far below the real productions. Now let us take the ten townships of our country at the same rate, (and they average that or more) we shall have a total for the country of $334,200 worth of bush and farm industry in one county not exhibited. Multiply this by 30,* the number of Counties in Upper Canada, some of which produce at least twice as much as Kent, and we have the neat little sum of ten millions and twenty-six thousand dollars. So that now I hope you will agree with me that the industrial resources of our poor country are not fully or fairly represented by the census of 1861.

Yours, &c.,

A Subscribber.

Raleigh, Kent, March, 1861.

Land Drainage and Irrigation—There are many thousands of acres of deep-drained agricultural land in different parts of Great Britain, where the outfalls of the drains are at sufficient elevation, and in suitable places, to allow of the water drawn off being used for purposes of irrigation. Lands, to be deep drained, may also be laid out so as to work the subsoil water of

* There are 42 counties in Upper Canada.—31 counties and unions of counties for judicial purposes. Ed.]

the upper portions over the surface and through the soil of lower lying districts. No available depth of drain yields pure water, and it has long been proved by analysis that water from a manured field contains soluble salts of any manures used; it must evidently be an advantage to pass such water over and through other lands. We throw out the hints for what they may be worth; we think deep draining and irrigation may work together with advantage.—*Builder.*

Liquid Manure.—Prof. Sprengel, the celebrated German chemist, asserts that each cow produces annually 18,000 pounds urine, which contains of solid matter 900 pounds. This solid matter is fully equal to the best guano, weight for weight, so that the liquid manure of every cow kept on a farm for one year, is worth, when applied to the crops, more than $20 annually, and so in proportion to all the rest of the domestic animals. It may be said that in no other department of rural economy does the American farmer lose so much by neglect, as in the management of solid and liquid manures.

Hay Required to Keep a Horse.—A correspondent of the Wisconsin Farmer, who has given careful attention to the subject, says that five pounds of hay at a feed, or fifteen pounds per day, with twelve quarts of oatmeal, or its equivalent in shorts, will keep a good sized horse is fine condition for all road or farm work, and in amply sufficient. Some will keep on considerably less; this however is a fair average.

The Art of Agriculture.—A great deal has been written and said about the science and art of agriculture, but for practical guidance the whole thing is in a nut shell. It consists in these two rules—make the land rich, and keep the weeds down. If any person who tries to raise any plant will follow these two rules he will succeed, and if he does not follow them he will not succeed.

Agricultural Intelligence.

Kansas a Sheep Country.

It appears from a letter of Governor Medary, of Kansas, recently published in the *Ohio Cultivator*, that that territory is peculiarly well adapted to the raising of sheep, particularly the fine and short woolled. The country is described as unusually rolling, without swamps or wet marshes; the hills in some places approach to mountains, with wide and dry valleys, having sufficient inclination of surface to afford good natural drainage. The climate, like all high rolling prairie of great extent, is peculiarly dry, with clear sky. Winter continues about three months, thermometer occasionally below zero, but generally mild, dry and pleasant. In some of the lower valleys sheep require but little artificial food or protection during winter, as but little snow falls in such situations. There is but little drizzling rain, which is so injurious to sheep. Millions of acres of the best pasturage are said to be yet unoccupied in the organized counties, extending 500 miles to the foot of the mountains, which may be occupied with sheep and cattle for little more than the expense incurred in providing shepherds, and abundance of hay can readily be procured. The Legislature has exempted sheep, buildings, and pasture lands from taxation. This is a glowing picture, which the original may not fully realize.

Wheat Planted in Hills.—We noticed, a year ago, the experiment of D. Yant, of Bolivar, O., in planting an acre of wheat in hills, using a little over five pounds of seed to the acre. The hills were 20 by 15 inches apart, with five kernels in each. He now reports the result in the *Ohio Farmer*, from which we learn that the grubs and cut-worms destroyed full one-half of it, and that it yielded at the rate of 17 bushels per acre, or 204 bushels for one of the seed. Mr. Y. says: It stooled enormously; thirty, forty, sixty and seventy large well filled heads from one grain were common, and I have 111 stalks of wheat that grew from a single seed, yielding about 4,000 grains, and a rye plant that produced 183 heads, containing over 10,000 grains—about this there is neither mistake nor guess work. Wheat put fifteen inches apart in the drills will not lodge, and to what extent liberal manuring, with some cultivation, may carry the yield, has yet to be tested."

Sheep for Wool and Mutton.—J. S. Tibbitts says in the Michigan *Farmer*, "If wool alone was my object, I would breed the Spanish Merino; if mutton solely was my object, I would breed either the South Downs, Leicesters or Cotswolds."

Remedy for Smut in Wheat.—A North Carolina correspondent of the *Country Gentleman* says the following has proved successful with him: To the first bushel of seed take three tablespoonfuls of blue vitriol, and soak three hours: Then pour off the brine, and dry the seed with lime. Keep the brine, and to every bushel of seed add one spoonful of the vitrol, and wash and skim as before, except the three hours soaking, and I think Tyro will soon be clear of smut in his wheat.

Agriculture in South Australia.—The Colonial Government *Gazette* published an extract of the agricultural statistics of the last season, but the detailed tabular statements have not yet been issued. It appears that the total number of acres under cultivation in the colony last season, inclusive of 56,266 acres in fallow, was 361,884½ acres, showing an increase in the land crop, as compared with the previous year, of 39,445¼ acres. The area on which wheat crops were grown was 218,216 acres and the total yield was 2,103,411 bushels; being an increase over the previous year of area to the extent of 29,513 acres, but a decrease in the total produce of 6,133 bushels. It follows of course that the average yield of wheat at the last harvest must have been miserably small; it is stated in the abstract before us at 9 bushels 36lbs. In barley there has been a falling off in both area and yield, as compared with the previous year, to the extent of 986 acres and 64,822 bushels. The average yield of barley is stated at 12 bushels 44lbs.—In oats also there has been a decrease, amounting to 74¼ acres and 528 bushels. In potatoes there has been an increase of cultivation with a decrease of produce—579 acres in excess of the previous year having been put under crop, while the yield fell short of the previous year by 4,323¾ tons. Hay stands in the same position, the area under crop having been increased by 9,291½ acres, and the produce having fallen short by 2,701 tons.—*Australian and New Zealand Gazette.*

Dibbling Corn.—As the subject of dibbling corn (wheat) is attracting considerable attention at the present time, it may not be uninteresting to some of our readers to have brought before them what was thought upon upon this point more than two hundred years ago. Our extract is from the 'Systema Agriculturæ,' published in 1861.

Of Setting of Corn.

Besides the usual manner of sowing of corn, are there several other ways of dispersing it, as by setting and howing of it in, &c. This art of setting corn seems to be very anticnt, as appears by Virgil, '*Unguibus infodiunt et ipsis fruges*,' and hath been a long time attempted to be brought into practice again, as appears by Mr. Platt's 'Adam's Tool Revived, printed in the year 1640, where he doth very ingeniously describe not only the way, but the great advantage that accrues by this then new discovery. The first part thereof giving you the reason why corn sowen in the common way yields not so great an increase as it doth by being set; then he shews you the manner of digging the land where you are to set your corn; then he proceeds to the description of his instruments, whereof some are only many pins, set at a convenient distance in a board, which, compressed on the earth, make so many holes where the wheat grains are to be dropt one by one; but because these are very unnecessary and troublesome, and that there are newer and better ways found out, I shall decline any further discourse about them. Also, he gives you the distance and debth; where he observes that, at three inches distance, and three inches debth, *there hath grown thirty quarters of wheat on an acre* of ground, and that four inches in debth and distance hath yielded but twenty quarters; he also speaks of five inches in debth and five in distance. It's probable the diversity of the land, or of these years wherein the experiments were proved, might beget some difference. Afterwards he adviseth, in barren lands, to fill up the holes with some good mixture or fat compost, or to imbibe the grain you set therewith.

Then Mr. Gabriel Platt succeeds with his newer and better composed method of setting corn, whereby he pretends to remedy all the inconveniences of the former way by his two new invented engines,—the one for the more expeditious setting of the corn, the other for the laying up the land on ridges, just on the tops of the rows of corn, that neither surplusage of moisture might annoy it, nor frost in winter kill it: which way prevents the laying the land in high ridges before sowing; neither need the land be digged, only ploughed, arrowed, and then set.

Here follows a long description of these engines, which it is needless to give, as we have evidently much improved upon these old implements; though we question whether, with all these advantages, we can grow 'thirty quarters of wheat to the acre.'

The Purik Sheep.

The following letter, describing this animal, was sent to the Society for the Acclimatisation of Animals, recently formed in London, by Dr. John Gardner:

Sir—A letter appeared in the *Times* a few days ago from Mr. E. Wilson, on the subject of the Acclimatisation of Animals. It stated that a great desideratum for England is an animal of size between the rabbit and sheep, and suggested the wombat. Two objections appear to lie against that animal—its burrowing habits, and the prejudice which would be certainly entertained against it as an article of food. Assuming that the subject would interest you, and come within the scope of your society, I take the liberty to point out an animal, the introduction of which into this country would be a great public boon, and I cannot but think would amply repay your society by the great popular interest it would excite. The animal to which I allude is a very diminutive species of sheep, found in countries adjacent to the Punjaub—the Purik sheep. This creature is so small that when full-grown it is not larger than a lamb of a few weeks old. It has small bones, and full, fleshy carcase, and its mutton is excellent. It gives two lambs every year, and yields 3 lbs. of very fine wool. Its habits are as domesticated as the dog; it feeds on every kind of vegetable, grain,

fruit, &c., and takes crumbs of barley-cake and shreds of fruit-parings, &c., from its master's hand.

To cottagers, small farmers, and, indeed, to all classes having gardens or living near small pieces of waste ground, it would be a most valuable acquisition. The food which would keep millions is wasted in this country. I have no doubt that a small flock could be got to England at a very moderate expense, and I think it probable that, were your society to evince an interest in the matter, the Peninsular and Oriental Steam Navigation Company would afford facilities for effecting the importation. The vessels of the company leave Kurrachee twice monthly, in connection with the transit on the Indus.

The Purik sheep would seem exactly adapted to supply the requirement mentioned by Mr. Wilson, and it would be an object worthy of the efforts of a public-spirited philanthrophist to import it. The countries it inhabits are not unlike England in climate—hotter, perhaps in summer, but colder in winter.

Farming in Kincardineshire, Scotland.

Sir,—A copy of the *Irish Farmers' Gazette* is now lying before me. Several interesting questions are referred to in it—such as the partial substitution of oatmeal as an article of diet, in place of potatoes, amongst the agricultural population, the cultivation of turnips, and the providing of sufficient housing of stock during the winter, &c. Perhaps the practice in this far off corner of Scotland may be interesting to some of your readers.

I may, then, premise that the great Grampian range of mountains, which extends in a north easterly direction across the whole of Scotland, terminate in this county, towards the confines of lower Aberdeenshire. Much of the area of the county is occupied by mountains, incapable of cultivation; but in the valleys and hollows, and along the line of sea coast, agriculture is conducted with the *greatest* energy. Great competition exists for the occupancy of land; and whenever an old tenant declines to give what the landlord may ask, the farm is at once advertised in the newspapers, a day is fixed for receiving *written* offers, and the result generally is that the highest offer is accepted. A lease for nineteen years and crops is granted; the landlord erecting all the farm buildings, often at a greal cost, and in some cases charging five per cent. on the outlay, while in others there is no charge. Capital is also advanced for draining, at from four to six and a half per cent., as the case may be, the tenant, on his part, undertaking to keep the houses in good repair, and the drains in working condition. The outgoing tenant has the privilege of selling off the whole of the last crop, which he generally does by auction; and the incoming tenant may purchase what he pleases of it. He has also to pay for manure which may be on the farm, but never for unexhausted manure *in* the land. He also pays for clover and grass seeds, sown on, perhaps, one-fifth of the farm, together with any ploughings which may have been given to the land. If he be an energetic farmer, he immediately sets about preparing for green crops, by deep ploughing his stubbles, collecting manure, &c.; as it is by producing heavy crops of turnips that he expects to keep his land in heart, and pay his rent, which is usually done about the 15th of February and 15th of August, for the preceding crop. The fifth-shift rotation is the most common—that is, oats, after two-year-old lea; turnips; barley, sown with ray-grass and clover, viz., 1 bush. ray-grass, 2 lbs. white clover, 1 lb. red, and 2 lbs alsike. The whole farm-yard manure is applied to the turnip and potato crop, with an addition of 3 cwt. of guano per acre to the former, and 4 cwt. to the latter. Great care is taken to clean the land previous to sowing the turnips, and afterwards by hoeing and grubbing, and finally, by furring up. One farmer, who acted with me the other day as a judge of turnips for a sweepstakes offered by the county club, and who farms nearly 500 acres, told me, while riding along, that his guano bill this year amounted to £500. The farmer who gained the sweepstakes told us that he bought annually five tons of manure for *each* acre he occupied, to mix with his farm-yard manure, besides having a large guano bill. I occupy 250 imperial acres; and my outlay for manures for the last ten years is above £1,000.

I mention these facts merely to show what can be done with profit under adverse circumstances, such as a generally poor soil and severe climate. In the parish to which I belong the rental in 1839 was about £11,000, and it is now above £17,000. Yours, &c., A Scotch Farmer.

Long Life and Farming.—What advantage hath the farmer in this respect? Not a little, as the results of reliable statistical observations, given in a condensed form in what follows, very satisfactorily demonstrate. Dr. Edward Jarvis of Boston, President of the Statistical Association, has prepared a table from the mortality reports of Massachussets, of men of different occupations. The average length of life of cultivators of the soil is much higher than that of any other large class, being 64 years, while that of professionsl men of all classes is 58; that of merchants and capitalists, 48; that of mechanics whose business leads them to outdoor activity, 48; that of mechanics confined to shops, &c., 47; that of sailors, 46; that of laborers, 45; that of common carriers, 44. Of the particular professions and occupations, the average longevity of clergymen was 56; of lawyers, 55; of physicians, 54; of coopers, 53; of blacksmiths, 52; of carpenters, 50; of masons, 48;

of tanners, 48; of merchants and clerks, 47; of shoemakers, 43; of painters, 42; and of tailors, only 41. This well established fact that farmers have the advantage of almost all other men, and altogether of any other large class, in point of longevity, seems worthy of record, and of a place in the memory. It may subserve several purposes, and be of special service in moments when we get discouraged, or discontented, along with a glance at our other blessings and privlieges.

Brine of Herring as a Manure.—The *Journal d'Agriculture Pratique* publishes an article pointing out the great advantages to be derived from the use of the brine in which herrings have been cured as a manure for land. From an analysis made by MM. Girardin and Marchand, it has been found that 543 litres of this brine, having a density of more than twenty degrees, contains as much azote or fertilizing matter as a cubic metre of farm manure weighing 800 kilogrammes, and 393 litres of brine as much phosphoric acid as a cubic metre of the manure. This brine, according to the experiments which have been made, is specially suited to land rich in carbonate of lime, the quantity to be used being not more than about 1,400 litres for a hectare ($2\frac{1}{3}$) acres. It produces very marked effects on wheat crops, increasing the produce both in grain and straw, and preserving it from smut; and when applied to rye, oats, colza, potatoes, and vegetables of all kinds; materially promotes their growth. It may also be used with great advantage in beetroot intended for feeding cattle, but must not be applied to that root when grown for the fabrication of sugar. This brine is applied in various ways. Some farmers spread it over the ground immediately after the crops are sown, while others mix it with the ordinary manure. From the quantity of herrings caught and pickled, it is calculated that 45,000 hectolitres of the brine might be annually devoted to agriculture.

Distillers' Grain or Draff which cattle-feeders have hitherto found so far from realizing their expectations in laying on fat, has, of late, been used, we understand by Mr. Finnie of Swanston, in feeding sheep with singular success. So satisfied is Mr. Finnie of the advantage of the application of distiller's grain, both in respect of economy and improvement, that he is fully determined to feed his sheep stock in this way throughout the ensuing winter.—Those whose farms are in the neighbourhood of distilleries might for their own satisfaction, test the desireableness of this mode of feeding on a small scale, and should they come to the same result, we shall have pleasure in receiving a communication from them on the subject.

Knit stockings were invented in Spain in 1550.
Handkerchiefs were first manufactured at Paisley, in Scotland, in 1743.

Horticultural.

Hints for the Season.

Although stern winter has not yet released his frozen grasp, and the thermometer a few nights since ranged as low as zero, yet there are now and then unmistakable signs of the nearer advent of spring, when the gardeners will be so beset with work, as not to know which way to turn. Every thing, therefore, in advance of the busy season, should be now done that is possible. Future plans should be finally decided, tools for out-of-door operations should be got in readiness and repaired when needed, tubers and seeds examined or procured, with special regard to their health and purity; for the gardener or farmer can scarcely commit a greater mistake than the sowing of inferior seed, which is always dear at a gift. The price of the seed usually bears but a very small proportion to the aggregate amount of raising a crop, therefore we strongly urge our readers to procure *the best*, whatever the price, and to deal only with such parties in whom they can reasonably place confidence.

No time should be lost in getting matters ready for active operations, as soon as the weather and the state of the ground will admit. It is best, however, not to be in too much haste, as the weather in early spring is often treacherous, severe frosty nights sometimes following warm and sunny days. Before planting trees or putting in any principal crop, care should be taken not only that frost is perfectly out, but that the ground is dry, with but little chance of the return of strong, chilly winds, which are often so disastrous to newly transplanted trees, and vegetation generally. In this climate but little can in general be done in making the main crops in the kitchen garden, till the middle or end of next month, but the particular preparations should be now commenced. Hot beds should at once be made; and in this climate where there is such an absence of early spring vegetables, they will largely minister to the health and comfort of the family. With small outlay and little attention every one that has half-a-dozen yards of ground, can do something in procuring early salads and vegetables, which

are truly considered as belonging to the real luxuries of life.

Orchards and fruit trees generally, should now be carefully examined and pruned; a most necessary operation, and, in this climate, much better deferred till the more intense frosts are over, but by no means so late that the vegetable fluids are in active circulation. Shrubs and exposed flowering plants, whose tips the frost has affected, should be severally cut down, which will enable them the more readily to make fresh wood when the growing season arrives, and sometimes prevent their being destroyed. Box-edgings, which have so neat an appearance along garden walks, may be made as soon as the frost is fairly out, and the ground getting warm and dry. Rooted plants are much to be preferred to cuttings, the latter being so liable to die in patches. Care should be taken to place the plants at a uniform depth, and tread the soil closely against the roots, in order to preserve a straight line and prevent disagreeably looking conditions. In Canada it is well to keep box-edgings pretty close to the ground, or they are liable to severe injury by winter frosts. A slight covering of leaves or rough muck before the warm weather sets in will do much to ward off this evil. All kinds of rubbish should now be removed from the garden, if not done before, and the walks raked and got into order, as soon as the weather and surface will admit. When the frost is thoroughly out of the ground, and before the latter becomes too dry, the roller should be put into requisition, both on the walks and lawn. If the grasses are getting thin and weakly, a slight top dressing of guano and salt, soot or wood ashes, or a rich solution of the nitrates of potash or soda, will be found highly advantageous; the latter should not be applied till the growing season has fairly commenced. In England these nitrates in a crude and impure state, are used pretty largely in agriculture, throwing rapidly much nitrogen into the cultivation of plants, and often changing their color, in a few days, from a sickly yellow to a healthy green.

In the vegetable garden no time should be lost, as soon as the frost is out and the ground dry, in making the necessary preparations for getting in peas, carrots, beets, parsnips, spinage, lettuce, onions, salary, early potatoes, &c. Caution, however, is required in these matters; and care should be taken not to put in any crop unless the soil is properly prepared, and sufficiently warm and dry. It often happens that but little can be done in getting in garden crops till the middle, and sometimes the end of April. In some situations and seasons, but little can be done before the beginning of May. Much, however, will depend upon the character and treatment of the soil, and the exposure of the garden. Under-draining when needed, and a deep, rough digging previous to winter setting in, will render Spring operations both earlier and easier, and the crops more abundant and certain.

Asparagus, rhubarb, and horse radish beds should be prepared as soon as the ground will admit. The two former require a deep, loose, rich soil, and care taken not to plant too thickly, which is a common mistake. Ground should be prepared for pot-herbs, which are required in every family; such as thyme, sage, mint, balm, and other perennial herbs. Cabbage seed of the summer kinds is sown in hot beds, and the young plants should be gradually hardened by careful exposure before being finally planted out. Cabbage requires well manured and deeply cultivated ground, in which a considerable amount of clay is incorporated; heavy soils produce a better quality than such as are sandy. Owing to the lateness and uncertainty of our springs, it is prudent not to be in too great a hurry in planting out cabbage; a caution indeed that is needed in relation to most other crops. Be always prepared for sowing as soon as the proper time arrives, which must be in great measure determined by the state of the ground and the atmosphere;—always remembering that in gardening, as well as in farming, ***haste is not necessarily healthy progress.***

Dwarf Apple Trees.

EDITOR CANADIAN AGRICULTURIST.—In a previous communication I endeavoured to call attention to the mode of training and planting orchards of apple trees adopted by Dr. Beattie of Nichol, and Mr. Werden of Picton, to advance some reasons why such a system seemed better adapted to meet the severity of our climate; and to obtain from these gentlemen a more full and detailed statement of their mode of culture, and of the results attained; in the belief

that the information in their possession would prove of great benefit, and show how orchards of apples may be grown successfully in some of our colder sections, where trees pruned up in the old fashion have thus far, and probably always will, fail.

Apple trees pruned in the manner adopted by these gentlemen may be termed *half standards* or *dwarf standards;* and are produced, not by grafting upon any peculiar stock, but by forming the head low and keeping it there by pruning. As we gather in the experience of cultivators in different sections, and this mode of training is more extensively tried, we shall know whether there be any parts of our country where even the dwarf standards will not endure the climate, and where consequently it becomes necessary to grow the apple in some other way, in order to enjoy the fruit fresh from the trees.

In view of the possibility of such a result, and of the difficulty already experienced in growing some very desirable varieties, I now propose to say a few words about growing the apple in the form known as the Dwarf Apple Tree. And in the outset, it may be well here to correct a very common but also very erroneous opinion, that the dwarf apple tree is a particular kind of very small apple, produced by an equally diminutive tree. On the contrary, any kind of apple, even the largest in size, can be grown on a dwarf apple tree. By grafting or budding the desired variety of apple upon the Paradise apple stock, the tree is dwarfed in its growth, begins to bear fruit at two and three years old, when the fruit is often larger and finer than when grown on the common apple stock. The Paradise apple tree, which is simply used as a stock, only grows three or four feet high, and when our fine varieties of apple are grafted upon it, the stock checks the natural growth of the graft, and compels it to form a low tree or bush, about the size of a currant bush. These stocks are as yet all imported from Europe, planted out here and grown until fit for grafting or budding; and though the tree is so very small as to look contemptible in the eyes of those accustomed to standard trees, yet they cost more and are necessarily at a higher price than apple trees grown on the common apple stock.

When thus grown on the Paradise stock, such varieties as the Baldwin, the Rhode Island Greening, and others too tender in the colder parts of the Province, seem to be perfectly hardy, and to endure any exposure and cold to which they have been subjected. It seems then but natural to expect that if there be any section of the Province where the apple tree will not thrive either as a standard or dwarf standard, that there it can be successfully grown when thus dwarfed. I have been informed by a resident of the county of Waterloo, that he is acquainted with sections, not very far north of him, where the inhabitants have never as yet gathered an apple of their own raising, though they have planted many trees that should long before this have shown fruit, but instead of bearing fruit they have wholly perished. Without more knowledge of all the circumstances, it is not easy to form an opinion of the cause of this extensive failure. Yet it has seemed probable that in those sections, where the snow usually falls so early as to cover the ground before it is frozen, and so deep as to prevent the frost from reaching it throughout the winter, so that the undug potatoes lie safely in the hill until spring, that there the roots of the tree are kept so warm as to allow of the sap starting too early in the spring, when the sun shines out in March and early April, upon the branches and tops, causing the buds to swell, and the sap vessels to be filled, before the severe freezing weather is all passed away.

But whether this be the case or not, the dwarf apple tree would be likely to be wholly protected in those regions, not only from sun, but from frost and frosty wind, for being so small it would be buried all the winter long under the snow, and thus kept safe until the return of spring made its covering no longer necessary. And besides all this, the slow, short growth it makes during the summer is so hard and firm, so well ripened and perfected, that it is prepared to resist a degree of cold that would kill a more succulent growth. Nor would the amount of fruit obtained from an acre of such dwarf apple trees be so trifling a matter after all, for although not more than half a bushel of fruit could be expected from each tree at seven or eight years old, yet being so small they are usually planted at six feet apart, so that twelve hundred trees are set on an acre. Our orchards of standard trees are rarely set nearer than thirty feet apart, giving at that distance only fifty trees to the acre, so that each tree must bear an average of twelve bushels per tree to equal the product of the acre of dwarfs. Very few orchards indeed, even in the most favored parts of the Province, yield such a crop at eight years old, and where the trees are liable to be injured by the winter when grown in any other than the dwarf form, the question as to which to plant is no longer open.

My object, however, was not so much to express my own views of the probable value of the dwarf apple tree to Canada, as to invite, through the columns of your journal, an expression of opinion by those who have tried them, particularly those who reside in the northern and western counties, where the climate is more trying than in this favored county of Lincoln. Mr. Werden has given them sufficient trial to say "as for dwarf apple trees, I feel so well satisfied that they will give good satisfaction, that I recommend every man that has ground only for a garden, to fill it up with these trees." But we need something more full and definite. We require to know whether any varieties are tender when dwarfed on the Paradise; and if so, what they are; whether the fruit is as large, as fair

and as high flavored as when grown on the common apple stock; at what age they generally begin to bear; how much fruit on an average is produced by dwarf apple trees at four years old; how much at eight. Also, whether they are adapted to all soils, or can be grown only on some particular soils; whether they require any special treatment, and if so, what it is; and whether they have been found to fail under any circumstances, and if so, what they were.

Many gentlemen doubtless have had more or less experience with dwarf apple trees on Paradise stock. Will they please send it to you, Mr. Editor, and in addition to Mr. Werden, you can call on Mr. C. Arnold, of Paris, County of Brant, who has had considerable experience with these dwarfs, under circumstances calculated to test their hardiness and general value for Canada.

D. W. Beadle.

St. Catharines Nurseries, March 1861.

Orchards on Steep Hillsides.

Well do I remember when I was a boy, getting many a bump in the ribs, from the plough-handle while working our steep hillsides for rye and buckwheat, and not with the best of feelings towards our forefathers for clearing the timber off. I am frequently asked which is the best place to plant an orchard. My advice is to take the best land. I would always prefer a sheltered situation, behind a hill or wood. Steep hillsides are generally objected to for planting an apple orchard; but I think a steep hillside is not the worst place by any means. My hillside orchard is doing quite as well as any I have. It is in the form of a half circle, with a south-eastern exposure. I planted my trees in a half circle to suit the hill, in order to make it more pleasant to work, and also to keep it from washing. I think that trees can be placed much closer on a steep hillside than elsewhere to advantage. My method of cultivation has been to plough down from the upper side to within four or five feet of the next row. I plough the first furrow close to the row with one horse; I then plough the balance with two horses.

In four or five ploughings it will form a terrace that unswers a very good purpose. I had also planted a row of nursery trees with each row of orchard trees, which did very well. By merely working from the upper side, the spaces are now level, or rather inclining a little back, which causes it to retain moisture much longer than it did before it was ploughed into terraces. The spaces between the terraces I use for strawberries, blackberries, seed-beds, etc. It is also a first rate place to raise early vegetables.

The side-hill used to be a regular eye-sore, but now it is the prettiest part of my farm. I think we can make no better use of our steep hillsides than to plant them with trees, if it were for nothing else than for the appearance. The grass growing on the terraces we used, when the trees were young, for mulching; drawing mellow ground on them from the upper side.—C. B. Ott in *Gardener's Monthly.*

Rhubarb.

The different kinds of rhubarb are raised from seed, and increased by that means, or by dividing the roots; the latter is preferable for increase, as there is a much greater advantage in getting good strong plants in one half the time they could be had from seed. If raised from seed, sow in sixty-sized pots, very thinly, in a mixture of earth consisting of one-half leaf mould and one-half rich loamy earth; place the pots in a cucumber frame, or hot-house, until the plants make their appearance, which will be in a very short time, provided the seed is sown in March. As soon as the plants have attained the height of one inch, let them be thinned out to a single plant, and in two or three days move the pots into the green house, or other cool place, to harden the plants. As soon as the pots begin to be full of roots, which will be the case in two or three weeks, let the plants be moved into pots a size larger, and in two or three weeks time the plants may be placed in the rows where they are to remain,

If increased by dividing the roots, take care that there is a bud on each part you intend to plant; let one of those buds be placed in the centre of each pot, and as soon as they begin to be filled with roots, &c., treat them the same as the seedlings. In making the ground or rows ready for planting, throw out the earth two feet in breadth, and to the depth of twenty inches; let this be filled up with equal parts leaf mould, rich loamy earth, the soil which is thrown out of the trench, if of a moderate quality, and one part of good rotten dung, to which add a small quantity of sharp sand; let all these be incorporated together. Fill up the trenches sufficiently high to allow for setting. When the earth has sunk down, turn the plants out of the pots into the middle of the trench, three feet apart in the row, and if a double row, let them be four feet row from row. If the above instructions be properly attended to, rhubarb of a first-rate quality will be produced. The only management required afterwards is to keep the rows clear of weeds, and every autumn to fork the ground over to the depth of four or five inches, covering the same with a good coat of rotten manure; take care not to injure the crowns in forking. As soon as any of the plants begin to run up for flowering, let the stem be immediately cut off, which will be the means of keeping the plants in a much stronger growing state; for, when they are allowed to retain the flowering spikes, it weakens the leaf stalks very much.—Rheum Giganteum, *St. Albans, in Gardener's Monthly Magazine.*

The Tomato—Its uses and Cultivation.

We find the following letter on this subject in the "Working Farmer," published at New York, by Chas. V. Mapes.

Dear Sir :—Since you and many other cultivators of the Tomato, have expressed your surprise and satisfaction on examining some of my Seedling Tomatos, and a desire to know their origin and proper treatment, I will with pleasure comply with your request.

Until within a few years, very little was known in this country about the Tomato. It was grown as an embellishment in some corner of a flower garden, and called the *Love-Apple* Now, it is an article of Daily food ; and in a few years it will be in common use in almost every part of the globe. Its culture and use will everywhere extend, just in proportion as reliable and exact information on the subject is spread. I have grown the Tomato, and watched its culture in many of the climates and countries of Europe and America, and I will furnish my little quota of observation and practical experience, hoping thereby to draw out valuable information from others. Everybody knows something of the value of the Tomato as a fruit, and how we should miss it if it could be raised no more. But very few persons know how easily and abundantly it can be grown in perfection, how cheaply it can be preserved for future use in many forms, nor its invaluable medical properties as conducive to health and vitality. I will speak on only two or three of these points

1st. *The best Kinds and Varieties.*—Six years ago I began a more thorough system of experiments than I had ever practised or seen. I prepared my beds for growing Tomatos, and the analysis of the soil corresponded very closely with the chemical components of the fruit. I then germinated ten or twelve of the finest varieties I had, or could get, and obtained large vigorous plants of the same kinds from our New York gardens. One of each was planted by itself, where it could not hybridize. In another bed *I planted all the varieties together, to make them hybridize, and multiply new kinds.*

I succeeded in getting one variety, which I found superior to any I had ever seen, in the following qualities—*delicacy of flavor, thinness and smoothness of skin, fewness of seeds, solidity of meat, earliness of ripening, richness of color, evenness of size,* and *ease of culture.* The next year I cast all other varieties away, and brought this to perfection ; and it has been universally pronounced by Agricultural Fairs, Farmer's clubs, and Scientific Horticulturists, to be superior to any other.

2nd. *My Mode of Culture.*—Germinate in a hot-house, hot-bed, or kitchen ; for very early fruit, transplant when quite small into pots. The Tomato improves by every transplanting, and each time should be set deeper. From the time four or six leaves appear, pinch or cut off the larger lower leaves and the terminal buds, and continue this process of pruning, till the fruit is far advanced ; so that when ripe, the bed will seem to be covered by one mass of large, smooth, even sized, Tomatoes, of the richest pomegranate color—and the leaves hidden by the fruit.

Set plants three or four feet apart, in the warmest spot you have, and let them fall over to the Northern frames twelve or fifteen inches high ; or on pea brush ; anything to sustain them ; and keep the fruit from touching the ground, which delays ripening, creates mould, invites cut-worms, and always gives the Tomato an earthy taste. Try for only one cluster, (the first that blossoms,) and cut everything else gradually away. This will give you Tomatos in perfection in the latitude of Buffalo, four or six weeks earlier than they are usually ripened in our climate. If you wish late Tomatos, pull up each plant by the root (just before the frost comes) and hang them up on the south side of a building, top down, with a blanket to roll up days and let fall nights. When ice makes, hang them up in any room that does not freeze, or in a dry cellar, and you will have fresh Tomatos all win ter—somewhat shrivelled, but of fine flavor.

EDWARD LESTER.

The Hot Bed.

Few that have not tried it can form an adequate idea of the amount of luxury and comfort that may be commanded in early spring by means of a hot-bed. In these northern parts, in particular, after a long and severe winter, early vegetables are relished with a peculiar zest. But without artificial means this enjoyment cannot be obtained. Sallad, spinach, tomatoes, melons, cucumbers, potatoes, and whatever it is desirable to anticipate in the course of the natural season, may be produced in a hot-bed, and brought to the table many weeks before they can be matured in the open air. For the wants of an ordinary family a bed 15 or 20 feet long and about 7 or 8 feet wide will be found amply sufficient. The following instructions for setting about the business are taken from the *New American Cyclopædia,* an excellent work of authority now in course of publication :—

HOT-BED, in gardening, a bed of earth so prepared as to bring forward at early periods of the year various kinds of plants by means of artificial heat. The fall of the temperature in autumn is met by the readiness of plants to fall into repose, and in those used to climate changes no

serious effect can be produced. Such, however, as are not acclimated cease to grow during any fall in the usual temperature, and commence again on its rise. Unlike animals, plants have very little power to generate heat, and are therefore dependent on the media which surround them for whatever degree of warmth they require. The earth may be heated many degrees more than the surrounding air, and yet prove in no way injurious to vegetation. The unusual vigor of plants growing near hot springs, and in places artificially heated by subterranean fires, is also worthy of attention. A species of moss, the only living thing found within 4000 feet of the terminal crater of Mana Loa, was noticed by Wilkes; its existence there being due to the steam which escaped, and which supplied it with warmth and moisture.

This heated condition of the soil, thus natural to seasons and to regions of the globe, would suggest what is called bottom-heat in gardening. Many seeds, especially those of tropical plants, will not germinate unless in higher than ordinary temperatures of earth, and to excite them some kind of stimulus is requisite. It is not an unusual practive in America to sow such seeds in midsummer in the open ground, which becomes so heated by the rays of the sun as to retain much of the warmth during the entire night. The hot-bed then, is a provision by which a constant and gentel warmth is maintained: and the external structure, which preserves this warmth, is called a frame. Many tropical plants will neither flower nor grow unless they are surrounded by an elevated atmosphere, and are planted in such heated soil as they are acccustomed to; and the same holds true with many aquatic plants. Meyen found the temperature of the water in the rice-fields where the red nelumbrium flourishes to be 113 degrees. Hence the hot-house or stove is erected for their especial accommodation, and by a system of hot water pipes or some similar contrivance the required heat is procured.

The hot-bed differs from the stove, in having the space between the sash and the surface of the bed very shallow, and having its heat maintained by fermentation. The work of the gardener in the early spring months is directed to the hot-beds or frames, and in these he forces such vegetables as he wishes to have prematurely fit for the table. The art of framing or management of the hot-bed depends much upon the accuracy and care taken in its construction. The ground where it is to stand should be defended from cold and cutting winds, and enclosed by a tight and well-built fence, or by live-hedges. The frame can be made of any suitable material, but should be so constructed as to give the top suface a proper slope to the sun, as well as a declivity to carry off the wet when covered with the sashes or lights. It is essential that they should be as tight as possible, so that none of the warm air from within, or cold air from without shall penetrate through the cracks On this declivity or slope the sashes should be laid, and in such a way that they can easily move or slide from top to bottom.

The bed that is to be covered by such frames must be composed of good horse-stable dung, selecting that which is fresh, most, and full of heat. After a sufficient quantity of such is procured, it should be forked into a heap, so as to mix it well, and allowed to remain eight or ten days to ferment equally; a necessary precaution lest the bed become too hot and thereby destroy the germinating seeds. At the end of this period the dung should be shaken and mixed, and formed into a bed four feet thick, beating it down firmly with the back of the fork. It is calculated that this thickness will be diminished at least 8 inches in a fortnight, when the frame and sashes are to be put on and kept closed until the heat comes up, when the glass is to be raised behind to allow the steam to pass away. This accomplished, the manure is to be covered with soil, which has been previously prepared in the form of compost, of equal parts of light, rich garden-earth, the mellow surface loam of rich old pasture-ground, and a portion of very rotten or old horse dung. This, having been well incorporated and exposed to the weather for several months before, is to be spread to the thickness of about 6 inches in a level manner, when the hot-bed is ready for use.

The seeds of most vegetables are sown in drills upon this compost, those of melons and cucumbers in small pots which are plunged into the soil. After the seeds are sown and the sashes are closed, the heat of the bed raises much steam from the moisture beneath; this should be suffered to escape by raising the corner of the upper end of tne sashes. An hour before sunset the sashes should be shut and covered with matting or some suitable protecting substance; and this is to be taken off regularly an hour or so after sunrise. Great caution is requisite, in a climate like that of the Northern United States in order to keep up proper warmth and to exclude any frost. After the seeds have vegetated and the young plants have come up, the sashes should be raised a little in the day time, so as to admit fresh air; and if the surface of the bed appears to be dry, it should be moderately moistened with warm water of about the same temperature as that of the enclosed air of the frame. After a while the heat will sensibly diminish, when it is customary to line the exterior of the bed with fresh dung and cover these linings with litter.

Tree Planting.—Mr. Wm. Bright, (good authority) recommends to the Gardener's Monthly, the planting of all kinds of trees as near the surface of the ground as possible, even for quite large trees, digging about four inches deep only, setting the tree in the basin, and when covering up to a mound with a cart load or two of earth prepared for the purpose. The tree then is in a position to start its new roots into the top soil, which is warm, instead of into the cold bottom soil they have to when planted the ordinary way.

During the past year the Massachusetts cotton mills have manufactured 30,265,284 yards of cotton cloth, or a webb of 18,190 miles in length.

Domestic.

Charcoal for Burns.—The Gazette Medicale of France, says that, by an accident, charcoal has been discovered to be a sure cure for burns. By laying a piece of cold charcoal upon a burn, the pain subsides immediately. By leaving the charcoal on one hour, the wound is healed, as has been demonstrated on several occasions. The remedy is cheap and simple, and deserves a trial.

Cooking Potatoes.—Never soak potatoes in water before cooking them. As soon as boiled, the water should be poured off, and the potatoes set on one side of the fire to dry, before they are peeled. This is the way to make them mealy. Steaming them is a still better way. Never cover them after they are ready to be dished.

An Improved Chamberlight.—Take a common cylindrical ointment pot, a 2 oz. size in the winter; in the summer a smaller one; fill this with any kind of fat, as the waste fat from the kitchen for instance. Trim by about half an inch of the common wax wick, sold at the tallow chandler's, simply stuck into a thin slice of a wine-bottle cork, upon which place a strip of stout filtering paper, about half the diameter of the cork in breadth, and a diameter and a half in length. It need not be quite so broad, but it must be at least the length stated. The reason for using the bibulous paper is, that it feeds the wick properly; without it, or some such contrivance, it will not burn. Remove with the handle of a teaspoon sufficient of the fat to allow the cork to be a little below the surface, and then place the fat so removed over the cork and paper, neatly spreading it to make an even surface. The light is now prepared.—*Ann. of Chem.*

How to Cure Bacon.—In answer to a question —"How to cure bacon by the mild process"—the *Irish Farmer's Gazette* gives the following directions:

"Singe off the hair, and scrape thoroughly clean; when cut up, rub the flesh side with common salt, and pack the pieces on the top of each other on a tray with a gutter round it to catch the brine; once every four or five days, the salt should be changed, and the flitches moved, placing those on the top at the bottom; five or six weeks of this treatement will suffice to cure the bacon, when it may be hung up to dry, first rubbing them over with coarse bran, or any sort of sawdust except deal; if smoking be preferred, hang in a chimney; if not in a dry, airy part of the kitchen not too near the fire. We are not acquainted with the Limerick mercantile process; the Wicklow is similar to that given above and practiced by farmers there.

A solid cake of gold, worth nearly $50,000 has been sold to the Bank of New South Wales.

Veterinary.

Anatomy and Function of the Heart of a Horse.

BY DR. DADD, IN AMERICAN STOCK JOURNAL.

On exposing he heart of a horse, we find that it is inclosed in a membranous sac, or bag, known as the pericardium or heart bag; the function of this tunic, or covering, is to limit its action—and supply from its interior tunic, a quantity of fluid to guard against the consequences of friction which would otherwise occur.

The heart is a dense composition of muscular fibre, and its funtion is of the involuntary order; so that its physiological expansions, contractions or beating occur without the knowledge or consent of the animal. The average weight of the heart of a horse is seven pounds. Yet when this organ becomes the seat of fatty degeneration or enlargement from any other cause, its weight and bulk are very much augmented. The heart is anatomically divided into *four* cavities, two of which in consequence of their assuming somewhat the form of the ears of a dog, are named auricles; these cavities, known as right and left, do not communicate with each other, and the septum or wall which intervenes is known as the septum auriculorum. The auricles are located in the front or anterior region of the heart; the ventricles are found in the back part, or posterior region. The right cavity of the heart, known as the right auricle, is the reservoir for the reception of venous blood, and three venous trunks terminate in it, viz.: the anterior vena cava—gate vein—which returns the venous blood from the fore extremities, head, and neck; next, the vena cava posterior, which returns the venous blood from the hind limbs and the posterior part of ths body; and to this may be added the coronary or crown vein, a vein of considerable size engaged in returning blood which has circulated through the substances of the heart for purposes of its nutrition.

A considerable quantity of dark venous blood is usually found in this auricle after death; this auricle has free communication with the right ventricle, by an aperture denominated the curiculo-ventricular channel or opening; yet in consequence of three valves, termed tricuspid, which close in an upper direction, when the ventricle contracts, the blood cannot return into the ventricle.

Internally the right auricle is lined by a glistening membrane, somewhat highly organized, having on various parts of its surface small muscular eminences, termed muscular pectintati; the small cavities which occur in consequence of this arrangement, are termed cul-de-sacs. The right or venous ventricle is also lined by a similar membrane, and has beneath it several muscular prominences named camæ columnæ—fleshy pil-

lars—which give origin to as many tendinous slips, which are known as cordæ tendinæ, they are inserted in a fibrous membrane in the region of the auriculo-ventricular opening and these are named valvula tricuspis.

The venous blood having accumulated in the right auricle descends into the right ventricle, from which it is propelled through the pulmonary artery to the lungs. At the commencement of the pulmonary artery are found three valves which in form are half-moon shaped—hence are termed semi-lunar valves,—their function is to prevent the return of the venous blood into the right ventricle.

The left auricle has scarcely any anatomical or structural differences than those observed in the right auricle, although its cavity is somewhat smaller, and its walls are somewhat thicker than those found on the right side; It is the receptacle for arterial blood, which is returned to it, after purification in the lungs, by vessels known as pulmonary veins.

The left or arterial ventricle, is the reservoir for arterial blood; which is destined to preserve the integrity of the animal economy, and guard against the wear aud tear of the vital machinery; its functions requiring more muscular power than that of the right ventricle, we find that its walls are much thicker, sometimes three times as thick as those found on the right side. This peculiarity of two ventricles, viz.: the muscular mechanism, enables us, when the heart is detached from the body, to determine which is the right or left ventricle.

The channel of communication between the left auricle and ventricle is named, as is the case with the opposite side of the heart—auriculo-ventricular opening; it is furnished, however, with *two* instead of three valves; these are termed valvula bicuspis. The left ventricle is one of importance for our consideration, from the fact that here originates the great aorta—a vessel of considerable magnitude—engaged in distributing, by means of arterial ramifications, the arterial blood to all parts of the human body; at its base, near the ventricle, we find three valves named semi lunar; they are similar in function and structure to those found at the base or origin of the pulmonary artery. This ventricle has no direct communication with the left and *vice versa*, between the two we find a strong muscular partition termed septum tentriculorum; hence, the heart is a double organ, one is employed in receiving pure arterial blood and in circulating it; the other receives venous blood and distributes it throughout the lungs for purification.

The heart is located in the region of the fourth, fifth, and sixth, dorsal vertebræ right within the central region of the cavity of the chest. It appears that in the bovine—ox species—the heart differs in construction from that of the horse, in the following peculiarities: In the heart of an ox is found a small bone, termed by anatomists "so cordis;" it probably is intended to serve as the attachment for the tendinous and muscular fibres which enter into the mechanism of the heart. Next we notice that on exploring the interior of the ventricles there are several fleshy bands, intended, no doubt, to aid the ventricles in their condition of dilation and contraction.

The Heart's Function.—The blood having gone the rounds of the circulation, through arteries, veins and capillaries, returns by the vena cava to the right auricle; it then passes into the right ventricle; by the contractions of this ventricle the blood is forced into the pulmonary arteries; from these vessels it reaches the capillaries, which are in contact with the air cells of that lung; here the venous blood comes in contact with the oxygen of the atmosphere, and is changed from a dark to a crimson colour, and now it returns, by the pulmonary veins, to the left auricle; from thence descends into its respective ventricle. The contractions of the left ventricle force the blood, just purified in the lungs, into the great aorta—anterior and posterior—which is the origin of an immense number of arterial branches, and it is through the medium of the same that the blood is distributed to all parts of the body.

The action of the heart may be thus summed up: When the heart contracts, the blood is forced into the trunk of the great aorta; this vessel and its various ramifications being endowed with elasticity, yield to the force and their calibre is increased into longer dimensions. So soon as the contractile force rests, blood ceases to flow into the aorta, it then recovers its size by virtue of its own elasticity, or in other words, *muscularity*, and thus forces the contained blood into the capillaries and to all parts of the system.

By the time the aorta has acquired its original size, the left ventricle again contracts, the same process takes place, and is continually occurring, and so the blood is made to move continuously forward.

The beating of the pulse, therefore, is merely the enlargement of the artery under the above conditions, or when fresh arterial blood is forced into it. The blood that passes from the heart in this manner, returns to it, on the venous side, by the veins, and by the contraction of the right ventricle the blood is sent to the lungs; so it will be perceived that there are two distinct circulations going on in the body at the same time.

Vivisection.

We beg to direct attention to Prof. Spooner's inaugural address on opening the session of the Royal Veterinary College, London, for 1860-61. It is replete with instructive matter to the students assembled; but that portion to which we would more particularly refer our readers is in reference to the brutalizing system adopted in

the veterinary schools of France, at Alfort and Lyons, in which living horses are subjected to the most torturing vivisection, which we give in the Professor's own words, as extracted from "The Veterinarian" :—

"The facts are these: at Alfort, which I visited, and still more I hear at Lyons, the pupils are instructed in surgery by cutting up living horses! Oh, then, is surgery fiendhood? Two days a week, at nine o'clock in the morning, the doomed horse is cast; and then he is subjected to all sorts of surgical operations, such as firing, neurotomy, cutting away pieces of the cartilage of the foot, operating as for stone in the bladder, extirpating the parotid and other glands, or the eyes, or any organ that forceps can pull, or that knives and saws can reach. Steel and fingers, guided by stony hearts, invade the poor animal at all points. These operations, on the same horse, last from nine o'clock in the morning until four in the afternoon; unless, indeed, he becomes unfit for the diabolism by dying in the meantime. Now, that is what we went over to France to expostulate against. I fear, however, that our deputation made but slight progress towards effecting what I think you will all admit was, on the part of the society, a most benevolent object. To talk of the necessity of these horrors for the purpose of teaching surgery is, I contend, utterly absurd. Here, I am bold to say, we can operate when it is needful, quite equal to the French veterinarian, though we have not learned the art by these direful practices. Our human surgeons, too, are many of them men of consummate skill, though they have not learned it by cutting and slashing living human beings. The same, indeed, may be said of human surgeons all over the civilized world; and yet if there is any necessity for it in one, surely there is the same necessity in the other There is not, in fact, a pretext for these acts, but they stand revealed as naked fiendhood; and I hesitate not to say, that every one who has systematically pursued them has become of necessity enamoured of cruelty, and is out of the possible pale of the healing art.

"I hope, gentlemen, the voice of indignant humanity will rise far and wide, from our profession and from the excellent society to which I have alluded—nay, and from all England, where compassion is ever quick to flow towards suffering—until this bloody spot on the veterinary schools of France is wiped away for ever. It is most painful to me to be forced to comment upon the proceedings of our neighbours in forms so harsh, when a very high form of friendship ought to reign between us. But there is no help for it; and I feel that I should be doing the profession in France an injustice did I not with all my heart, with all my mind, and with all my might contend against acts which are destructive of the best interests and tendencies of society, as well as shameful to civilization, and utterly hostile to every pretence of any maxim to humanity.

"Vivisection for physiological exploration may or may not be justifiable, in rare instances; but, if practised, it always ought to be done under some anæstethic influence; and the doing of it should be avoided by every conscientious physiologist, whenever possible. I may add that physiological schools of vivisection, in which all sorts of animals are cut, and slashed, and sawn open, for mere repetition to the eyes of students, are as infamous in cruelty as Alfort or Lyons. The Society for the Prevention of Cruelty to Animals must keep its eyes open to check the tendencies of these horrid practices, which, it is to be feared, are budding forth in this country, and bring the public opinion, and the law of England, to bear, if necessary, to root them out."

We fear that vivisection has got into England also, if we may believe some reports come to our knowledge. Let us hope that such an abominable blot will not, by any means, be introduced into this country, under any pretence whatever. —*Irish Farmer's Gazette.*

Lice on Cattle.—Justus G. Lewis writes the *Prairie Farmer* that if animals are washed all over with soft soap of about the consistency of very thin batter, it will not take the hair off nor injure the animal in the least, and it will destroy the lice. One application is usually enough. It is the best remedy he ever tried or read of.

Remedy for Choked Cattle.—As soon as you discover that the creature is choked, take hold of the windpipe, below the potato, or whatever it is, with both hands, having one thumb on each side, and work out. If that fails, take a horseshoe and put into the mouth to hold it open, then run the hand down the throat and take it out. I knew an ox once that was choked with a potato to throw it out by giving him two or three spoonfuls of Cayenne pepper.

Treatment of Ringbone.—A correspondent of the *Country Gentleman* says, that he cured this very obstinate disease within a month, with the following recipe:—

½ pint spirits turpentine.
1 ounce oil oreganum.
1 ounce oil amber.
1 ounce oil of spike.
½ an ounce aqua fortis.

Mix in a bottle, and apply daily (Sundays excepted) with a swab.

Cracks in Horses Hoofs.—The following is Dr. Dadd's mode of treatment of this troublesome complaint, consisting essentially in sewing the parts together, by means of a strong waxed cord:—

"The best practice would be, first, to poultice the foot, (supposing the shoe to have been removed,) with a view of softening the hoof and removing any extraneous matter that may have insinuated itself into the crack. When the hoof

is sufficiently softened, it should be cleansed, examined, and dressed with tincture of myrrh. Select a spot about an inch below the coronet, and with a small gimlet bore a hole through the two edges of the crack, and another one inch above the toe. A straight needle, armed with a strong ligature, is to be passed through the upper holes, brought over and through a second time; thus closing the two edges of the fissure by what the sailors term a "round turn." The same thing is to be repeated at the toe. The assistant, by the aid of the pincers or otherwise, shuts the crack as close as possible, the ligatures are each drawn tight, and tied with a surgeon's knot. A small quantity of blister ointment is to be smeared over the crack, and bar shoe applied.

"The cure is accomplished in two ways—first, by fusion; secondly, by the growth of new horn from the *matrix* downwards. After the edges have firmly united, cut the ligatures, and pare the uneven edges of the *cicatrix* level with the surrounding parts, and the cure is completed."

Popular Errors.

Editors Agriculturist.—"I have recently seen in an agricultural periodical, that the common diseases of the horse are similar to those of man; and the same medicines, in those diseases, are as useful to one as the other. Again we are constantly seeing means of expelling bots. I believe it is universally admitted that 'The Horse,' by Youatt, is a reliable work. On the first of the above subjects we therein find the following:—Epsom salts are inefficacious, except in the immense dose of a pound and a half, and then they are not always safe; and on the latter we find, 'The bots cannot, while they inhabit the stomach of the horse, give the animal any pain, for they have fastened on the cuticular and insensible coat. They cannot stimulate the stomach, and increase its digestive power, for they are not on the digestive portion of the stomach. They cannot, by their roughness, assist the trituration or rubbing down of the food, for no such office is performed in that part of the stomach—the food is softened, and not rubbed down. They cannot be injurious to the horse, for he enjoys the most perfect health when the cuticular part of his stomach is filled with them, and their presence is not even suspected until they appear at the anus. They cannot be removed by medicine, because they are not in that part of the stomach to which medicine is usually conveyed; and if they were, their mouths are too deeply buried in the mucus for any medicine that can safely be administered, to affect them; and last of all, in due course of time they detach themselves, and come away. Therefore the wise man will leave them to themselves, or content himself with picking them off when they collect under the tail and annoy the animal."

I am induced to make these remarks from knowing that a neighbor during the past season in a supposed case of bots, administered to a horse, a large doze of calomel, for three days in succession, followed on the fourth day by a pound of Epsom salts. These doses produced *no* preceptible effect,—fortunately, no bad effect; but such experiments must surely be dangerous.

Briar.

Co. Carleton, Feb. 7th, 1861.

Cure for "Hove" in Cattle.

In a late number of the *Agriculturist* I observed a question on "Hove in cattle," and your answer as to the remedies usually applied for relief to the animal affected; but in too many instances these remedies are not successful, and stabbing has to be resorted to, however unwillingly, for it is a clumsy cure, and leaves bad effects.

I was last spring on a visit to the county of Sussex, where I met some very intelligent breeders and feeders of stock; the subject of "hove" in cattle was discussed, and surprise expressed that I had never heard of the simple and effective cure universally practiced in that county, where hove is very common, particularly amongst their working cattle.

On the swelling causing pain and uneasiness to the animal, a large pail of the coldest spring water is dashed over the back of the animal, or, if the pail is small, two pailfuls; leave the animal quiet for five or ten minutes, and if the wind does not begin to dispel by belching up the throat, repeat the water or shower bath, and the cure will likely be complete.

I confess I was a little incredulous that so simple a remedy would have the effect. But I had not been many hours returned home, when I was called upon to stab an ox dangerously swelled, almost to bursting, from the effects of eating diseased potatoes.

Before resorting to the stabbing operation, I ordered the water cure to be tried; and after a second application it was quite successful,—within fifteen minutes the ox was lying down, chewing his cud, and perfectly well.

Having mentioned this fact to a very intelligent nobleman in the county of Perth, he related what his brother, a captain in the royal navy, told him on return from his last cruise at sea, had happened to a cow he kept on board of ship, fed highly, and subject to hove. This animal was so ill as apparently to affect her brain. She jumped overboard, and was, of course thoroughly immersed in water, was immediately hauled on board again, the swelling dispelled, and no bad effects.

This is strong corroboration of the efficacy of the Sussex cure, which I thus make public, in the hope that my brother farmers may reap the

same benefits as I have done, and that success or failure may be reported by those who have occasion to try the experiment, which, in any case, can do harm.—Hugh Watson, *in North British Agriculturist.*

Education of the Horse.

That horses may be trained or *educated* so as to be free from tricks and freaks, and perfectly manageable by any sensible driver, needs no argument to prove, the fact is patent to every observing reader. That their education is wofully neglected, is an other equally evident fact, and a writer in the last volume of Flint's *Agriculture of Massachusetts*, well touches up this subject in the subjoined paragraph ;

One horse is almost perfect, but he pulls away when hitched to any thing less than a cable ; another is very smart and kind while you have hold of him, but if let alone for a moment to himself, springs into a gallop and leaves you alone ; this horse runs away if his tail gets over the line, which it is very apt to do ; and that one if anything touches his legs ; here is one of the very best but goes when and where he chooses. Closely related to him is another, all right if you can tumble into the waggon before he starts. This one kicks, that one bites, and another strikes with his fore feet. One is rendered unmanageable by the sound of a gun or steam whistle, or band of music, and another is terribly afraid of a locomotive, or train of cars, or even of a railroad track. Some will shy at a stone, or a stump, or a white cow, or a bit of paper, and others at a stage coach, or a loaded waggon, or a wheelbarrow. One fears a robe, another an umbrella, and another his own shadow, and so on, and so forth. Now where is the fortunate individual who owns a horse of some spirit, and without one or more of these tricks ; and yet almost every colt may be broken, (educated,) in one month's time, so as to be free from every one of them, and that without any more use of the whip than is necessary to demand his attention."

Sand for Bedding for Horses.—Mr. Small, of Dundalk, Ireland, a veterinary surgeon of considerable experiecce, states that sand is not only an excellent substitute for straw for horses' bedding, but superior to straw, as the sand does not heat, and saves the hoofs of the horses. He states that sand is exclusively used for horses' beds in his stables.

Lice on Cattle.—Ordinary lamp oil has been tried with success in killing lice. It should be applied freely, from the head along the back, and behind as far down as the udder.

Insects on Stock.—Well kept stock, housed in clean, well-littered, white-washed stables, are rarely, unless they take them from other cattle, troubled with vermin—but pulverized copperas and sulphur, in the proportion of one teaspoonful of copperas to two of sulphur, with a little salt—mixed in half a bushel of meal, given twice a week, for three weeks, to 100 head of cattle or hogs is said to be a complete cure.

Keeping Horses' Legs and Feet in Order. —If I were asked to account for my horses' legs and feet being in better order than those of my neighbour, I should attribute it to the following circumstances: First, that they are all shod with few nails, so placed in the shoe as to permit the foot to expand every time they move ; second, that they all live in boxes instead of stalls, and can move whenever they please; third, that they have two hours daily walking exercise when they are not at work ; and fourth, that I have not a head-stall or track-chain in my stall. These four circumstances comprehend the whole mystery of keeping horse's legs fine, and their feet in sound working condition up to a good old age.—*Miles on the Horse's Foot.*

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

Continued from page 156.

KENT.

County Society.—Eighty-five members; amount of subscription, $85 ; balance from 1858, $218 84 ; deposited by township so cieties, $318 ; total received, $10 75. Paid township branches, $557 86 ; premiums, $312; copies of *Agriculturist*, $75 ; expenses, $44 02 : balance in hand, $86 12.

Extracts from Report.

With regard to the agricultural position of the County of Kent, the Directors observe that Kent, as a County, is watered by the following navigable waters, viz : Bear Creek, on the Sydenham, running through it to the North, Lake St. Clair to the Westward, the Thames through the heart of the County, and Lake Erie to the Southward. That as a general observation, no part of the County is distant more than seven miles from navigable water.

Heretofore the produce of the land, owing to the difficulty of access to market, has been comparatively valueless. Now the construction of gravel roads, plank roads, rail roads, and superior steam navigation in our inland waters, will give a rapid and cheap transport

of our products, which will place us in a better position to compete with other counties. With such prospects as these the farmer will prosecute his work with increased energy; and we have no doubt that the agriculturists of this county will endeavour to raise their standard of farming to that practised in the best agricultural counties in the old world.

The march of improvement is manifested by many of the farmers of this County, by the removal of the great impediments to thorough tillage, viz: stumps, &c. The removal of such obstacles as these enables the farmer to adopt the improvements of the day, such as deep ploughing, high manuring, draining, &c.

It is pleasing to observe the decided improvement in ploughing throughout the county. The ploughing matches,we have no doubt, have been the cause of this improvement; they have created a spirit of emulation among ploughmen, especially the younger portion, who bid fair to surpass their senior competitors. The quality of the workmanship in the class of boys in the ploughing matches in some instances equalled that of the first class.

The timber of the County is almost entirely deciduous, viz: beech, maple, oak, black ash, white wood, and walnut, with some pine and cedar on the shores of Lake Erie.

Connected with the produce of the forest it may be mentioned that several species or varieties of the willow grow, particularly on plains, beaver meadows, and swamps of the townships of Tilbury East, Raleigh, Howard, and the two Dovers, most of which are available for either the coarser or finer varieties of wicker work, or basket making. And this County Society desires to direct the attention of the Agricultural community to the fact that during the long winter evenings a large proportion of adults and juveniles might be employed profitably as basket makers, &c.

Of cereal crops the most important is wheat, the next, maize; then barley, peas, white beans, and buckwheat. The staple commodity may be said to be fall wheat, then oats, spring wheat, barley, and, especially on the borders of the Thames, peas.

Broom corn is likewise, in some townships; as Raleigh and Romney, for instance, extensively grown,and gives employment in the winter to the families of the farmer, with the aid of little and cheap machinery.

As to tenure of land in this County the most of it is freehold. The generality of farms do not exceed 50 acres of arable pasture and meadow land.

Of mineral manures, as lime, marl, and gypsum, small quantities are used; lime and gypsum are articles of import.

The value of land may be stated to be, for improved farms, with the average amount of accommodation, viz: frame house, barn, cattle sheds, and stable, about from 15 to 50 dollars per acre; and for wild land, excepting the marshes of Dover, Tilbury, Harwich, the Rond Eau Point, and Raleigh, about from 4 to 12 dollars per acre, according to the situation and the value of the timber for lumbering purposes.

Of flax and hemp the Directors observe that the soil of this county is well adapted for their cultivation. But no great attention has been given to it in consequence of the want of machinery for the conversion of the raw product into articles of commerce. The flax seed distributed by the Board of Agriculture arrived very late, but was sown by G. W. Foott, Esq., Messrs. Willmore and others.

It may be observed that carrots, parsnips and turnips are grown more for household use than the feeding of stock, and form no part of a system of rotation of crops.

The average amount of grain produced to the acre in this county for 1859 may be set down as follows:

Wheat, (fall).....	15	bushels	per acre.
" (Spring)....	20	"	"
Maize,.....	30	"	"
Barley,.....	25	"	"
Oats,.....	50	"	"
Peas,.....	25	"	"
Beans, ...	20	"	"

The early fall wheat and Rye, and early sown spring wheat also, were almost destroyed by the summer frost. The late sown corn or maize was in many cases sown three times over, and even then ploughed up for buckwheat.

With regard to the Annual County Exhibition the Directors observe that the attendance was very large, the live stock was not as good as former years. In farming implements there was but little competition. The articles that were exhibited were very creditable to the parties exhibiting them. The show of grain, roots and other vegetable productions was very good. There was a fine display of cheese and butter. No county is better situated than Kent for grazing, and some of

our farmers, especially the township of Howard, make a very large quantity of cheese, to the extent of several tons per annum.

The Directors feel assured that the improving prospects in our productions are a source of congratulation, and we may venture to say that few, if any, counties in this Province shows more durable improvements. The farms in Kent show an increasingly neater and more cultivated appearance than formerly, and a better description of dwellings of brick and frame houses are annually taking the place of the old log hut.

The following observations by Messrs G. W. Foott and David Wilson were ordered to be appended to the annual report, and forwarded to the Board of Agriculture:

Flax—Mr. Foott writes: "In answer to your question enquiring how the flax seed the Board of Agriculture distributed last year succeeded with me, I beg to state that not having received the seed in time it was sown much too late in the season. However, with this great drawback, it grew well, the severe frost of the 7th of June, which destroyed all my wheat, rye, corn, and potatoes, and greatly damaged timothy and clover, did not affect the flax in the least.

The soil and climate of this county appear to me particularly adapted to the growth of flax. The land must be well prepared and clean; but before the flax can to any extent be grown here, farmers must have information as to the proper mode of retting or rotting, the necessary machinery within reach, to prepare it for market, and then the market and probable price per ton. With this information and these facilities, I have no doubt flax would be extensively grown in this county. But unless the farmers are instructed and assisted, and understand that the crop will pay, I fancy little progress will be made.

The government should, in my opinion, (and if properly recommended, I believe would) have the necessary information promulgated, particularly through Kent, for the reason already given, and supply the necessary machinery, which is by no means expensive, and might also readily find out what the farmers might expect for a fair sample per ton at the Railroad depot.

In Ireland the crop is failing, and has been for some years. The linen mauufacturers of that country are now turning their attention to India to get a supply. Cheap labour there would be the only advantage over Canada. We have climate, soil, and distance in our favour. The value of flax in Ireland ranges about 20 guineas per ton.

From the above you may be enabled to shape your report, and I would recommend the society to apply to the Provincial Agricultural Board for practical information, which would enable the Canadian farmer to understand the mode of culture and preparation, particularly the mode of rotting other than steeping in water; as a failure in the commencement would have the effect of discouraging many, and thus prevent them undertaking the growth of an article which would pay better than any crop in Canada.

Sheep.—Mr. David Wilson, of the township of Harwick, whose experieace in sheep husbandry has extended over twelve years, gives in the following statement: "In selecting a stock of store ewes, see that they are of pure breed, young, strong, and healthy. I prefer the large Leicesters to all others, but be sure to get no more than you can take good care of. Let them be in good condition before going to the ram, and be very particular in your choice of one, for it is upon him your main dependence lies in the improvement of your flock. 30 ewes are a sufficient number for one ram to serve. Do not let them fall off in flesh after they become pregnant; the day you do so, you greatly, if not irreparably injure their chances of weathering through the spring successfully. When winter sets in provide them with a good warm and well ventilated house, with proper racks and troughs to feed in. I feed on hay and beans, and all the water they wish to drink. I have a flock of 36 ewes; they have drank as much as twelve patent pails of water each day during the time the ground was covered with snow. I gave a good supply of hay and $\frac{1}{3}$ of a quart of beans a day to each sheep. I prefer the above feed to roots, as our climate is too cold for the latter. I sheared 31 last June, 18 of which were raising 23 lambs; the average weight per fleece was within a small fraction of $5\frac{1}{2}$ lbs., as a reference to Messrs. McKeough's books, of Chatham, will prove to be correct. From the produce of 31 head I have realized $135, and have 36 left. All those engaged in sheep husbandry may not be as lucky as I have been, for this cause: the great mistake in regard to sheep is in not keeping them well enough; and the great

cause for having weak lambs and careless mothers I attribute to poor feeding and poor shelter, with a bad supply of water."

TOWNSHIPBRA NCHES.

CHATHAM.—Thirty-seven members; amount of subscription, $37; balance from previous year, $26 18; sundries, $7 90; total received, $71 08. Paid in premiums, $42 25; copies *Agriculturist*, $5; expenses, $14; balance in hand, $9 83.

Extracts from Report.

The soil of this township in the front and rear is generally a heavy clay and clay loam, while in the centre of the township it is a sandy loam, and has always until the last three or four years been a largely wheat producing township. During the years 1857 and 1858 the wheat crops were nearly all destroyed by the weevil or midge. In 1859 it is impossible to say whether the crop would have been again destroyed by that scourge of the farmer, or not, as in order to escape its ravages, the farmers generally had sown their seed early, and of such early varieties, (the Mediterranean, blue strem, and Soule's,) that in trying to escape from Scylla they fell into Charybdis; inasmuch as the wheat crops here being so far advanced when heavy frost in June came, was consequently all, or nearly all, destroyed.

The Board think that they may safely set down five bushels to the acre sown, as the average return of the wheat crop of Chatham township for 1859; whereas the usual average in this township in a good season may be set down as 30 bushels. The pea crop has been a remunerative one—the kind of peas sown has been generally the common blue and the Prussian blue. The average return to the acre sown may be set down at 25 bushels, for which the farmers have realized the handsome sum of seventy-five cents per bushel, and even as high as $1 per bushel has been paid for good samples of clear blue—these prices being paid by Americans, who came from Rochester and Buffalo, N. Y. For some years peas could not be raised here, on account of the peabug, but in 1858 and 1859 the crop was entirely free from this destroyer.

The corn and buckwheat crops, which were extensively planted, on account of some other csops having been totally destroyed in the spring, have proved very light crops, owing to the cold, dry summer and early fall frosts.

A large area of land was likewise planted to potatoes, which have been below an average crop, say 150 bushels to the acre.

In the cultivation of the soil for these crops no artificial manures have been resorted to, other than the common produce of the barn-yard; as it has been found, especially in the front farms, that the application of manure to the soil extensively has caused too great a growth of straw, and a less quantity of grain than otherwise. The average price of farms may be set down as $50 per acre for farms in the front, and $20 per acre for farms in the rear; for bush lands, which lie chiefly in the rear, the price may be set down as $8 per acre.

The prices paid to farm-labourers have been $12 per month, and board; for day hands, 75 cents per day.

With regard to animals, until late years not much attention has been paid to the improvement of the native breeds. Lately, some very fine Durham cattle and Merino sheep have been introduced, and appear to suit this locality, and promise to repay the expense of introduction. But it would be premature to state figures as to the advantages sufficient time not having yet elapsed fully to test the question as its importance demands; although it may be here remarked that this is chiefly a grain producing township, and there has not heretofore been much attention paid to the improvement of breed in cattle. In horticulture, this township can excel; but with a few exceptions, it is not so extensively cultivated as its importance demands. Lately Mr. Wm. Webb has established a nursery near the town of Chatham, where fruit trees of every description are propagated, and garden seeds of all varieties are raised in perfection; but on account of the heavy frost in June, which destroyed all garden fruits, the Board have no report to make of the different varieties displayed in 1859, as it would afford no fair index of the capability of the soil for this class of culture.

Lastly, under this head the Board have to report, that the great disadvantage under which the farmers labour in this township,—which is also the reason why the Board have no report to make out of any thorough draining undertaken by particular farmers,—is the level nature of the land throughout the whole extent of the township, which will require a combined system of ditching and draining to be undertaken, either by the Municipality or Government in connection with the people, to

render it effective; as it is utterly impossible for any individual farmer, or even a neighborhood, to undertake it, as there is no sufficient natural outlet as yet cleared out, in the centre of the township, even to carry off the surface water, but all surplus water has to undergo the slow process of evaporation.

With respect to agricultural implements, with the exception of thrashing machines, reaping machines, cultivators, and seed-sowing machines, no others, as yet, have been introduced into the township.

HARWICH.—Fifty-one members; amount of subscription, $51; balance from previous year, $27 48; share of public grant, $71 29; received for services of stallion owned by Society, $155 25; proceeds of a note, $50; received for seeds sold, $12: total received, $367 02. Paid for keep and attendance of horse, $180 50; premiums, $50; paid for seeds, $15 48; incidental expenses and sundries, $64 29; balance in hand, $56 75. The directors of this society also report a partial destruction of the crops by late frost, but that on the whole the returns were better than for two years previously.

HOWARD AND ORFORD.—Ninety-two members; subscriptions, $108; balance from previous year, $71 38; grant, $111 81; received on debts due society, $293 50; total received, $584 69. Paid for premiums, $135 25; sundries, $444 66; balance sheet imperfect.

RALEIGH.—Fifty-two members; subscriptions, $52; balance from previous year, $134 30; share of grant, $71 88; received on account of sundry notes for seed wheat, &c., $520 89; total received, $779 07; appropriated to purchase of spring wheat for seed, $394; paid for a bull, $80; paid in premiums, $74 25; expenses, $17 55; balance in treasurer's hands, 213 27.

TILBURY EAST.—Twenty-six members; amount of subscriptions, $50; balance from 1858, $60; share of public grant, $69 88; total receipts, $179 88. Paid for sheep of improved breed, $83; paid for keeping bull, $20; other expenses, $26 88; balance in hand, $179 88.

Extracts from Report.

The first settlers, consisting of three or four families from Britain, entered the woods in the centre of this township, in the fall of 1833, and were located on 100 acres each by the Hon. Col. Talbot. They settled on the bank of a creek, or on a little beech ridge, supposing these spots to be the very best in the township, being then a dense, wet and level forest, without a single blazon or mark to direct them to the shore of the Erie or the River Thames, except the spots made the Surveyors. In order to pass the creeks that are on the straight line to lake or river, they had to travel 8 miles to the nearest settlers, and 14 to mill, or any place they could get a yard of cloth or any thing to buy, and to wait until they could get a few bushels ground at a horse-mill. The first seven years were spent in the making of sleigh-roads, building shanties, learning to chop, and trying to hoe corn and potatoes among the green roots. Then the men who had just got a field cleared and the troubles of fever and ague, then prevalent, almost over, were warned out as militia to repress the rebellion. From the year 1840 until the Board of Works began to make what is called the Middle Road, in 1846, many left the settlement. Some got a little for their improvements and others got nothing; as no one would take the lots as a grant from the Government. But the road through the woods raised the spirits of those who remained, and gave some employment to those who had nothing to sell; and others made a little money of hay and potatoes, &c., that enabled them to make some ditches around their small clearances to take off the surface water; after which they sowed more fall wheat, which produced surprisingly well, in many cases from 20 to 40 bushels, of an excellent quality, to the acre, and from 20 to 35 bushels of peas in the crop preceding the fall wheat. In 1846, at the town-meeting, the organizing of an Agricultural Society was proposed, and a committee appointed to draw up a Constitution in accordance with the Act of Parliament. The subscription for 1846 was $19, being one dollar by eacn member. Each got a number of the *British American Cultivator*, and with the balance the Society purchased a Bull, partly of the short-horned breed, and two Rams; which improved both cattle and sheep to some extent. In 1848 the funds were used in getting a Threshing Machine, as none of the settlers were able to buy one; this saved so much labour in winter as cleared many acres that would otherwise have been left unimproved, and in 1849 the whole sum, not required to pay a balance on the threshing machine, was given to assist in erecting a steam grist and

saw-mill, that still continues to do good work, in the centre of the township ; so that small sums through the Society, have, with the industry and economy of the members, enabled them not only to live in this new settlement, but to extend their improvements farther than many have done in more favourable situations.

There is not, perhaps, a better soil in the province than in this township, being of deep yellow clay, except a few creek-banks of white clay or red sand : and there is not an acre in the whole township we know of that cannot be made dry by making a ditch around it, except the marsh on the front along the Thames and the St. Clair.

The natural state of the bush-land in this township is wet, covered with a variety of flowering plants on the dry land, and a close crop of winter grass on the low land. When these grasses are closely pastured they give way, and are supplanted by, and closely covered by white clover and other grasses similar to what may be seen on the natural sward of Britain. The timber is much varied : large oaks and hickory, bass wood, black and white ash, hard and soft maple, elm, and a few trees of button wood, almost on every lot ; some birch and cherry in small trees, and white wood in some parts, with a similar variety of under wood.

There have been many orchards planted out, but only about twenty in the interior of the township producing apples. It is much to be regretted by many that they did not fence and drain a small spot sufficiently when first clearing up, to save the trees from being broused by breachy cattle. Our garden is only a spot prepared for early potatoes, cabbages, beets, beans, onions, carrots, &c., as used for the kitchen garden, without the ornaments of flowers, unless a few of the most common kind.—Our houses are being renewed by exchanging the log for a frame or brick.

The wheat-fly began its ravages here in the harvest of 1856, destroyed one half of the wheat in 1857, and in 1858 about three quarters of it, so that we were discouraged from sowing ; but the little that was reaped the past year was nearly free from injury. And the pea crop, that had scarcely been tried on account of the bug for nearly five years, came off almost entirely free from damage, and averaged 20 bushels to the acre. In 1859 corn was planted to a great extent, partly owing to the want of seed oats, &c., and came off a good crop, averaging 60 bushels in the ear to the acre. Hay was a light crop ; the clover was thrown out last winter by the frost more than ever we have seen it before in this township. There is a great breadth of fall wheat sown, chiefly on the pea ground, as had been done here for several years previous to the disease in the pea, and it looks promising so far.

The want of good water is certainly a drawback here, but like all new settlements, there has been but little done in the way of digging wells and building them up with stone or brick, as in older sottlements. However, there have been several springs found here, the water of which tastes a little salt, but is improved by cleaning out the soft muck in which they have been found : cattle like the water exceedingly well.

There is another great loss to the settlement, by the neglect of clearing the fallen timber out of the creeks in this flat country, in the flooding of the land in the spring, and sometimes in the fall. The water spreads over the flats of all the creeks, and prevents the small ditches, that at best only partially drain our roads and fields at the depth of eighteen inches from emptying until the water subsides, which is often not till after the space of eight days ; whereas, if our creeks were cleared of the fallen timber and a few beaver dams, the water would be at least two feet lower at the flood than at present, and give ample fall to admit of the thorough drainage of our fields ; which we hope soon to begin in this settlement. The first thing is the clearing out of the natural rivulets or creeks, and in some parts the opening of large ditches, which should be at least four feet deep, and the enlargement of almost all our open ditches between fields. In this flat country the great length of large ditches in order to get an outfall, is a work in many instances too expensive for the owners of farms in newly cleared townships ; and, as remarked by others, it cannot be given to the individual farmer directly from Government,but might be to the Township Municipalities that are not already in arrears. It would be a constant source of trouble to lay out a sum that could be got for the purpose for the benefit of the individual asking it for thorough drainage ; but it might be used for general drainage in procuring the outfalls, even in new places, if borrowed and expended by the Municipalities.

When the wheat crops began to fail in 1857, many that had not enough cleared commenced to chop for potash, at first it was said

to clear the land heavily timbered with elm and blackash, and make some money after paying the workmen ; but after it has been tried by many of us, we can only say that it pays the labour and clears the land ; and by working at it many have kept their families well. There are about 20 potasheries and one pearlashery in the township. This is certainly a great improvement over the way we had of clearing at first, when we paid seven or eight dollars an acre for chopping, and then logged and burned up every thing, even the largest oaks, except what was to be used for rails. The want of roads and the distance from the lakes made the timber of no value, even had we had the knowledge of making it into staves or potash. The large trees of oak are dying off very fast ; they seem to be full grown ; at any rate they are easily hurt by opening the woods near them, so as to let the sun and air to them.

This settlement at first was very subject to fever and ague, of which there has been now little known for seven or eight years. Occasionally a stranger in the west has an attack of it; but there are many from Lower Canada, (Scotch people) who had settled there for some years, and who have been in this township for five or six years, and have not yet had the ague, so that on the whole the township may be termed healthy.

Cattle have not thriven very well ; sometimes they take a disease we call murrain, when it is common to lose three or four at the same time ; then they may do well for years. The disease seems to prevail most in the fall, when they are in good condition ; but stock that have been ill cared for during the preceding winter are the most liable ; and perhaps if the winter accommodation and care in providing them with hay and turnips, were more attended to, the disease wouid not prevail to such an extent as at present.

Sheep have frequently been destroyed by wolves and dogs, from being allowed in many instances to range on the wild grass instead of an old field of clover, but none of the diseases that destroy large flocks have been observed here.

There are only a few farms having sufficient space of clearance for laying out in regular shift rotation for cropping ; however, many of the older settlers, being from Scotland and the North of Ireland, aim at it, and we have no doubt but the soil will be well farmed in a few years, if the times and crops come to their suual way again.

We regret to say that green crops have been but little tried.

The price of land is rather a difficulty to get at. Two or three lots, with about 35 acres cleared, changed owners a few years ago for $2000 per lot; but the last two years there has been neither courage nor money in this part to buy land ; but it is hoped that the figure will be raised when times improve again. The wild land is chiefly occupied except the Canada Company's, and the large block south of the Middle Road. The Company hold theirs entirely over the rate of wild Land here yet, and it is difficult forone person to get on in the large block, but the Rail Road would, if made through it, settle it at once.

If our non-resident lands were occupied by settlers, it would greatly facilitate our agricultural interests, and enable us to establish School Sections to meet the wants of all.

We only want agriculturists with a little capital and good moral character, and a few good choppers that could have from $10 to $15 a month, to make Tilbury East, like the land we left, except the hills, the heather, and the little crystal springs.

KINGSTON.

Electoral Division Society.—The following are extracts from the Secretary's Report:

A sum of more than eight hundred dollars had been subscribed and paid over to the Society in 1859, and the amount thus realized, added to the grant from the Provincial Treasury in 1859, to which the Society became entitled by its compliance with the provisions of the statute, had materially aided the Kingston committee of the Exhibition in their efforts to provide the accommodation which had given such general satisfaction at the Exhibition of 1859.

By the present organization, if the Electoral Division Society, and the County and Township Societies think proper on future occasions to unite, excellent exhibitions of agriculture, horticulture, manufactures, and works of art, may be held in the Crystal Pal- and the other structures specially adapted to the different objects intended for exhibition.

A bountiful harvest has been garnered in the United Counties in 1859, and the steady, although no high prices realized for every kinds of farm and garden produce, may well incite the members of the society to renewed exertions for the current year.

The crops in this district for 1859 may be roughly estimated as follows:—

In oats, peas and rye, there have been more than the average crops. In the two last the yield has been very large, and the quality good.

In barley the produce has been large, and quality harvested good.

In wheat, notwithstanding the severe frosts which occurred in the first and second week in June, the average must be considered good.

Indian Corn suffered from the frost. Buckwheat also suffered from the same cause.

Flax and hemp were but little cultivated in the district, but the samples shown were good, and the former will be more extensively cultivated during ensuing years.

All the tubers and roots sown early and carefully cultivated, yielded well. Potatoes gave a large crop, and generally speaking, of excellent quality. Carrots, parsnips, beets, and mangel wurzel yielded very largely; turnips not so well.

One new variety of the potato merits more than a passing notice. It was introduced into Canada by the Vice-President of the Kingston Horticultural Society, and was first grown by him on his farm near Kingston. It is called the Victoria potato, and produces very large crops of full sized tubers, which keep well during the winter. The potatoe is of a very white color, and when prepared for the table is sound, mealy and pleasant to the palate. Dr. Sampson has rendered an important service by the introduction of this variety of the essulent, and the members of the Society who desire to substitute the new tuber for worn out or less perfect seed, would do well to select this potato, which may be procured in the city, the object of the introducer being to disseminate the Victoria potato largely among the farmers of the district

Hay throughout the locality was a poor crop, the late frosts exercising a marked influence upon the grasses, as well as upon the fruits. The crop of Apples in a few exposed positions suffered severely.

In Horticulture and Floriculture the severe frost of June and September had the effect of preventing many amateur and professional gardeners who had taken unusual pains to produce fine and interesting specimens, from making so successful exhibition as they would otherwise have done. The members of the Horticultural Society of Kingston abstained from holding their usual autumnal show with the view of enhancing the interest and increasing the attractions of the Provincial Exhibition.

In dairy produce, the samples shown at the Provincial Exhibition, were of the first quality and nearly all from our own district; the judges remarked that they had difficulty in awarding the prizes in butter, as the samples were all so excellent. In cheese the judges had never seen the quality excelled in any part of the Province.

Editorial Notices &c.

The Principles of Breeding: or, Glimpses at the Physiological Law involved in the Reproduction and Improvement of Domestic Animals—By S. L. Goodale.—Boston: Crosby, Nichol & Co., 1861.

We have to thank Mr. Goodale, the able and zealous Secretary of the Roard of Agriculture of the State of Maine, for a copy of his interesting and useful treatise; the execution and "getting up" of which is alike creditable to author and publishers. Mr. Goodale has succeeded in condensing a large amount of valuable matter in a form that will both interest and instruct, and we can strongly recommend the work to all who are desirous of becoming acquainted with the matters treated of, which are as follows:—1. Introductory; 2. Law of Similarity; 3. Law of Variation; 4. Atavism or Ancestral influence; 5. Relative influence of the Parents; 6. Law of Sex; 7. In-and-in-Breeding; 8. Crossing; 9. Breeding in the Line; 10. Characteristics of Breeds.

The "Farmer and Gardener," and the "American Bee Journal," for February and March, have been received. These interesting and useful serials are published monthly by A. M. Spangler & Co., 25 North Sixth Street, Philadelphia, at prices that should command a very extensive circulation. The *Farmer and Gardener* has long been known as an agricultural and horticultural paper of the first class; and from what we have seen of the two numbers of the *Bee Journal*, we predict for it an extensive patronage. It is the only periodical on this continent devoted to Apiarian matters, which are not only extremely interesting in a

natural history point of view, but may be made in many localities profitable also. These two monthlies, with a handsome Premium Book, are furnished to subscribers for the very low sum of $1 50 per annum! We are always glad to hear of American periodicals of first class, on Agriculture and its sister, Gardening, circulating on this side the line; and we can confidently recommend those at the head of this notice.

The Westminster Review for January; and Blackwood's Magazine for February.—New York: Leonard Scott; & Co. Toronto: H. Rowsell.

The new number of the *Westminster* is, as usual, full of well written papers on subjects of current interest. The general scholar and political economist can scarcely forego the privilege and advantages of consulting this talented quarterly; but we deem it right to warn our readers, especially youthful and more ardent minds, against its latent and avowed skepticism on the higher subjects of religion. The present number comprises,—Government Contracts; The Realities of Paris; Ceylon; The Social Organism; Sicily as it was and is; Christian Revivals; Italy, and the designs of Napoleon; Contemporary Literature.

Blackwood is this month as attractive as usual. The opening article, School and College life, its Romance and Reality, is almost equal to Tom Brown at Oxford and Rugby. Spontaneous Generation, is treated in a truly calm and philosophic spirit, and richly merits a careful perusal. The other articles are, Carthage and its remains; The Transatlantic Telegraph; The Iceland Route; Norman Sinclair, continued; Biographica Dramatica; Judicial Puzzles; The Foreign Secretary.

Descriptive Catalogue of Garden, Agricultural, and Flower Seeds, Implements, &c., for sale by James Fleming, Seedsman to the Board of Agriculture and Provincial Association of Upper Canada, 350 Yonge Street, Toronto; Established in 1836.

Descriptive Catalogue of Seeds for the Farm and Garden, Implements, &c., for sale by J. A. Bruce, 46 King Street, Hamilton. Tenth annual edition.

Catalogue of Garden, Agricultural and Flower Seeds,—for sale by J. A. Simmers, Market Place, Toronto. Sixth annual edition.

These catalogues plainly indicate the progress which both Agriculture and Horticulture are making in this Province. A few years ago many articles contained in these lists could not have been had short of Rochester, New York, or Philadelphia; now there is scarcely any new plant or seed adapted to the climate of this country, or suited to green or hot-house culture, but what may be readily obtained. The above catalogues contain, in addition to the price of the articles, some brief and seasonable directions for cultivating the more important crops of the garden, of which we shall probably avail ourselves in our next issue.

Reports of Agricultural Societies.—We beg again to remind the officers of County Agricultural Societies, that their reports of proceedings for the past year, including those from the Township Societies, must be forwarded to the office of the Board of Agriculture on or before 1st April, and they are requested to see that the reports are as correct as possible before transmitting them.

Lloyd's Patent Broadcast Seed Sower.—A specimen of this machine, manufactured in this city, by John Wrigh', corner of Yonge and Gerrard Street, has been left at our office for inspection. Price $10.

Our Subscription List.—We are happy to say that our list of subscribers continues to augment in the most satisfactory manner. Parties forwarding lists, will please recollect that it will be only those received on or before 1st April, accompanied with the amount, that will be entitled to receive any bonus in the shape of the money premiums offered. Of course, however, subscriptions for the paper will continue to be received after that as usual. We have still plenty of back numbers on hand.

Emigration to Canada.—Canada: a brief outline of her geographical position, productions, climate, capabilities, educational and municipal instiutions, fisheries, railroads, &c., &c. Third edition, published by authority, Quebec: John Lovell, 1861,—Price one shillling. This is a very useful and very well printed pamphlet. It contains a large amount of information in a concise form, and is accompanied by an excellent Map of the Province, being a reduced copy of the new Government map. It will form an excellent medium for those who wish to communicate information to their friends in Europe in regaid to the resources of this country. [This notice should have appeared in a former number.]

THE MINNESOTA FARMER AND GARDENER.—St. Paul Minnesota. We have received the January number of this new journal, being the the third number from the commencement of the publication. It is edited by Messrs S. M. Ford and J. H. Stevens, and is well got up. The contents convey an idea that the enterprize and agricultural resources of the new State augar well for its future progress.

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AS the season for transplanting Trees, &c., is approaching, I beg to call the attention of the public to my Large Stock of Fruit and Ornamental Trees, Flowering Shrubs, &c., comprised for the most part of the following Nursery productions, viz: *Apple Trees*, Standards and Dwarfs; *Pears*, Standards and Dwarfs; *Plums*, Standards and Dwarfs; *Cherries*, Standards and Dwarfs; *Peaches*; Nectarines; Apricots; Gooseberries, all the best English varieties; Currants of all the new kinds; Raspberries of all sorts; Strawberries, three varieties, including new sorts; Grape Vines, 12 Foreign varieties, grown in pots for Vineries, &c., and for out-door culture the following proved varieties, Diana, Concord, Delaware, Hartford-Prolific, Rebecca, Isabella, Clinton, and Catawba, with all the other new kinds highly recommended in American Catalogues; Rhubarb of all sorts, Asparagus, Sea-Kale, Horse-Radish, &c., &c. Also, upwards of 200 varieties of choice Hardy Roses, including many new varieties now on their way from England; 100 kinds of Dahlias, amongst which are some new ones imported this year; 40 varieties of Phloxes; 1000 Plants of Chinese Pæonies of 40 different kinds; a large collection of Flowering Herbaceous Plants; and 1000 Plants *Dielytra Spectabilis*, the FINEST Hardy Herbaceous plant in cultivation. The following Hedge plants are cultivated largely:—Buckthorn—the best Hedge plant for Canada—White Cedar, Red Cedar, Hemlock, Privet, Barberry and Tartarian Honeysuckle. The Ornamental Tree department will not be found wanting in any particular.

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Box 364, *Toronto.*

Toronto Nurseries, March 1st, 1861.

P. S.—BEWARE of *American Tree Agents*, who sell *inferior* stuff, at *higher* prices than Canadian Nurserymen. All Agents for *these* Nurseries have my signature to a certificate to that effect.

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March 9, 1861. 6t

THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, APRIL 1, 1861. No. 7.

Feeding of Horses.

The Horse while it is the most useful, is also the most expensive animal of the farm. In this country the same animal is generally used for all purposes,—in drawing the pleasure carriage as well as the plough or wagon, and also for the saddle. Ours are in fact horses of all work;—not generally of large size and powerful muscle, but light and active, and wiry, and not unfrequently possess great power of endurance. Perhaps, on the whole, they are pretty well suited to the wants and peculiarities of the country. We believe, however, that our horses of late years have not kept pace in improvement with horned cattle, and others of the domesticated animals. An infusion of fresh blood is, in many districts much needed; and the importation of a few first rate pure bloods of the hunting and racing types, would soon bring about changes and improvements of the most desirable and important kind.

The horse should be both fed and worked as regularly as possible; avoiding alike great fatigue and pampering. He is by organization a very sensitive animal, and greatly affected for good or bad, by the nature of the treatment he receives, and the conditions in which he is placed. As a general thing the food of our horses is not sufficiently varied. Hay, straw, and oats, in a dry and uncut state, constitute their only food for a large portion of the year. These valuable materials whould be rendered much more suitable by cutting; steaming the two former, and bruising the latter. Steaming in some instances may be thought inconvenient, and too troublesome; but cutting or bruising all kinds of dry food can be readily practised, and will be found economical. When whole oats are fed to horses a considerable portion, by escaping mastication, passes through the intestines, without yielding up to the wants of the animal but a small portion of nutritive matter.

We have said that Horses should be fed with systematic regularity, and both the quantity and quality of their food should be modified according to the kind and amount of work they perform. The amount of hay and grain fed to horses may be considerably diminished by giving them a small quantity of bran and roots daily. Swedish turnips and carrots, either boiled, steamed, or given raw, are an excellent food, and potatoes and mangels, in moderate quantity, may be given with advantage. During our long Winters and protracted Springs, succulent food of this nature will greatly tend to keep horses in a thriving healthy condition; and every farmer should grow roots for his horses, as well as for his cattle. The white, or Belgian Carrot, yields a heavy crop in Canada, if properly cultivated; and when fed to horses tends to promote a soft sleek coat, and to strengthen the functions of the respiratory organs. Systematic feeding, cleanliness, a literal supply of pure water, and sufficient warmth and protection, combined with adequate ventilation, will not only promote the

health and strength of the horse, but will materially add to his years of active and profitable labor. We condense the following account of the method of feeding horses practised by Mr. John Croall, of Edinburgh, one of the largest work-horse proprietors in Britain, from the *Journal of Agriculture.*

His horses are fed as follows:

4 lbs of cut wheat, or oat straw, or chaff.
½ lb. of crushed oil cake.
1 lb. of barley.
1 lb. of beans.
2 oz. of linseed.
½ oz. of salt.

This is one feed for a horse, and the mixture is thus prepared:—The cut straw or chaff is spread out in a large wooden trough to the depth of six inches; the other ingredients are boiled into a liquid, and poured over the chaff; a fresh layer of chaff is spread over it, and then another dose of the mixture given, and so on, layer upon layer, till the trough is filled, when the whole is thoroughly mixed together and allowed to cool. Besides the above, each horse is allowed a bunch of wheat straw in their racks, and 12lbs of bruised oats mixed with peas, barley, wheat, or beans, with a sprinkling of salt, but no hay. Carrots are also a favourite article of diet. A case is mentioned of a farmer feeding his horses on 5½ stones of carrots, and 2½ stones of hay made into chaff, during the winter months. As the days became longer, some oats were added to the carrots and hay. When the carrots failed, 16 lbs. of oats did not keep them in as good condition as the 5½ stones of carrots. We shall be glad to be favored with an acccount of the practice of any of our readers, who have had experience in this important department of of farm-economy.

The Great International Exhibition of 1862.

It has been finally decided that another World's Exhibition of human skill and industry in all the various departments of arts and manufactures, agriculture, &c., shall be held in London during the year 1862. A guarantee fund, amounting already to about two millions of dollars, has been commenced, and the necessary preliminary arrangements have been completed. From the experience they have had in Europe in the management of these gigantic exhibitions, and the absorbing interest felt therein, the forthcoming exposition of the world's industry and civilization, will, it is confidently believed, very far exceed any of its predecessors.

It will be in the recollection of many of our readers, that Canada occupied a distinguished position at the first great exhibition held in London, in 1851, and also in that of Paris, in 1855. The amount of benefit, which this Province has, in different was, received in consequence thereof, it is impossible to calculate. Our position as a member of the great confederacy of civilized nations, has been recognized and respected; and we must be careful to show the world, by occupying our proper place in the exhibition of next year, that we are still moving onwarbs. It is of the utmost importance that our people should commence preparing *in time.* The Spring of 1862 will soon come round; and how much there is to do between this and then, provided we are determined to do our best, can hardly be conceived. We are glad to observe that our Board of Arts and Manfactures has already moved in the matter, and the Board of Agriculture did the same, at its last meeting.

Nothing, probably, can be finally or very definitely determined on, till the intentions of the Government are made known. In the meantime, our artisans and mechanics, among whom of course we include agricultural implement makers, should be on the alert, as no time should be lost in deciding what they are best capable of doing. And we trust that the farmers in all sections of the country, will do their utmost to produce the best specimens that our soil and climate are capable of yielding.

Composition and Nutritive Value of Cotton Cake.

Cotton Cake seems to be extending itself as a cattle food in England, and is said to be in some respects superior even to linseed cake. The latter is not so well known in Canada as it ought to be, as we can easily grow flax, of the seed of which it is composed, after the greater portion of the oil has been expressed. The

principal points of interest, in reference to cotton Cake, are collected together in the following short summary from an article in a late number of the *Journal of the Royal Agricultural Society of England*, by PROFESSOR VOELCKER, Chemist to the Society.

1. The best cotton-cake is richer in oil and albuminous (flesh-forming) compounds than linseed cake, but contains less mucilage and other respiratory constituents.

2. The mineral portion of the cotton-cake resembles closely in composition that of linseed and other oil cakes. Like the ash of all cakes, it is rich in earthy and alkaline phosphates, and well adapted to supply animals with bone materials.

3. As far as the indications of chemical analysis can be depended on, the best decorticated cotton-cake possesses about the same nutritive value as linseed-cake.

4. At the present time four distinct kinds of cotton-cake are offered for sale in the market, namely :—

(1.) Thin decorticated cotton-cake.
(2.) Thick decorticated cake.
(3.) Common cake, made of the whole seed.
(4.) Oil meal, or number 2 reduced to coarse powder.

5. The thin decorticated cake is a far better and more economical food than the ordinary cake, which is often quite unfit for feeding purposes.

6. Thick cake scarcely differs in composition from thin cake; but being hard, and $2\frac{1}{2}$ to 3 inches thick, it cannot be crushed by an ordinary oil-cake crusher, and therefore presents inconvenience to the consumer.

7. Genuine oil meal is simply thick decorticated cake reduced to a coarse powder, and of course has the same composition as the cake from which it is made.

8. The composition, and with it the nutritive value, of different samples of cotton-cake, is subject to cousiderable variation.

9. Decorticated cotton-cake and oil meal, in comparison with other kinds of artificial food, are decidedly cheap feeding materials; and both, no doubt, ere long, will find that favour with the British farmer which a really valuable and cheap article ef consumption is certain to command.

How to feed Pigs.—Farm Buildings and Manure, &c.

EDITOR OF THE AGRICULTURIST:

I beg leave, Mr. Editor, to propose a few questions:

1st, Which is the best mode of fattening hogs: to mix the meal in a thick batter, wtth hot water, and let it stand and get sour, or feed it dry, or in what other way?

2nd, Which is the best method of saving manure,—in barn-yards fitted with tanks, or in manure cellars?

3rd, The most economical way of building barns and sheds or stables, and whether it is best to build barns with sheds and yards, or to stable the cattle?

I would be glad to have some or all of these questions answered by you or some of your readers. By so doing you will oblige,

Yours, &c.,
JAMES COURTENAYE.

Hartford, March, 1861.

REMARKS.

1. It would be difficult to lay down any sytem of fattening swine that would not require modification in some of its details, when generally applied. An important point in cold weather is to keep the animal dry and warm; the sty, therefore, should be tight and front the south. Pigs make very slow progress in fattening in this country during the severe weather of winter; they should be pushed on as fast as possible during the fall, and got ripe for the butcher by the earlier part of the winter. The quickest way of fattening pigs is to give them animal substances, that is, grease, greave-cakes, &c. Linseed or oil-cake rapidly fattens. But none of these things produce a good quality of meat. The best materials are barley, peas, oats, and corn-meal. Any one or more of these substances, mixed with water, with a small quantity of boiled or steamed potatoes, will prove an excellent food. In cold weather the mixture should be given warm and in a fresh state. Skim milk, butter-milk, and whey, are well adapted to pigs, and may be given with advantage, to store-pigs especially, as wash in connexion with the refuse of the kitchen; and such a mixture is thought to answer best when a state of acidity has been produced by fermentation. Peas and Indian Corn may be fed to pigs in a dry and whole state, and they will fatten in this way with a plentiful supply of wash. The meal of any of the above grains, with a small quantity of steamed potatoes, mangels, carrots,

or turnips, well mixed into a pretty thick batter is the best food that can be given. It is well to change the food occasionally, and to add a little salt. Regularity in feeding, attention to warmth and cleanliness, and not to give the animals more food at a time than they will clear up, are among the most important means of fattening pigs, with a view to quality and economy.

2. Manure can be made and pretty well taken care of in open yards, provided the roofs of the buildings are provided with eve-troughs. During our winters but little waste occurs, as decomposition goes on but slowly and very little rain falls. The danger is in the spring, and every precaution should be used to prevent the washing away of the soluble portions of the manure. Tanks will be then found useful, and a covered shed in the centre of the yards, for sheltering the heap as it is progressively formed, would greatly tend to preserve the heap from deterioration. Cellars would in many cases be found inconvenient and expensive. The chief thing is to prevent the water collected on the roofs coming into the yard, which should be kept well littered and in as dry a state as possible.

3. This is a difficult question to answer in a few sentences. Much depends on the size of the farm, the relative amount of grain raised and stock kept. Some close stables for horses and milch cows during the nights of our inclement winter are necessary; but we prefer also having a plentiful supply of sheds and open yards for young and growing animals, and likewise for sheep. The latter should be allowed plenty of space and ventilation, if kept dry and sheltered from winds the cold will not hurt them. Indeed, a regular supply of fresh air is as essential as food to all the domesticated animals; but sheep perhaps suffer more than any other kinds, by being pent up too closely. The sheds and yards should be carefully sheltered from the north-west, and opened as much as possible to the south. We shall be glad to hear from any of our readers who have had experience in these matters.

On Meadow and Pasture Grasses.

Editor Agriculturist.—Iwish to sow some kind of grass along with clover, that will answer as well as timothy for hay, and that will give better pasture after being mowed than timothy does. I know that you have recommended several kinds lately in the *Agriculturist*, but as it would not answer me to try many experiments, perhaps you would give me your opinion as to which is the best kind, and whether the same kind would answer equally well on high and on low land. The land that I want to seed is one part high land—loam with clay bottom,—the other is low black land with clay bottom. Another thing in connection with this is, where can the seed be got, and can it be got without paying a ruinous price for it? I tried to get Alsike seed last spring in Hamilton; the price was 60 cents per lb. I thought it would scarcely pay, so I did not buy it.

A Reader.

East Flamboro, March, 1861.

REMARKS.

Our correrpondent will find it difficult to get any better grass *for hay* than timothy,—or any, perhaps, that is *generally* equal to it in this climate. The Blue Kentucky Grass, and the American Orchard Grass are highly esteemed for hay, producing, on good soils, heavy crops, and for subsequent pasturage they are superior to timothy. These grasses, we think, would suit the soils mentioned by our correspondent Sow about 16 lbs. of the grasses, and 4 lbs. of clover to the acre. Mr. Fleming, seedsman, of this city, sells the grasses at 25 cents per lb., clover at 10 cents, and Alsike clover at 50 cents. The latter article has for some years maintained a high reputation in Scotland, and in the northern parts of England and Ireland. It has been tried by several farmers in different parts of Canada, for the last three or four years with increasing approval. It is hardy and very productive, yielding excellent pasturage, after being cut for hay. About 4 lbs. of Alsike clover, and the same quantity of timothy will be found sufficient for an acre.

To secure good permanent pasturage, care should be taken, especially during the first year or two, not to allow sheep to eat it too close,—which weakens the plants,–clover in particular,–by injuring the crown, or connection between the root and the stem. When the pasture is getting too thin, a slight top dressing of farm-yard dung and plaster, with a little fresh seed, including white clover, sprinkled over, will be found to renovate and improve it.

Rape ploughed in as Manure.

Messrs. Editors,—Would you be kind enough to answer the following questions in an early number of the *Agriculturist?*

1st, What time should *Rape* be sown when it is to be ploughed in as manure?

2nd, What quantity of seed per acre is required when sown broadcast?

Yours, &c., C.

Woodstock, 16th March, 1861.

REMARKS.

The time for sowing rape is not restricted to a few weeks, but in order to get a strong plant, the operation should not be unnecessarily deferred. The habits of the plant being very similar to the Swedish Turnip, it can be sown at the same time—May or June,—and treated in a similar manner. It is best to sow plenty of seed, say 3 or 4 lbs. per acre, and even more on the poorer class of soils. Rape being a gross feeder, requires good land, and when sown on poor soils, some slight manuring should be given: a sprinkling of plaster over the young plants will be generally found beneficial. When the plant is approaching flowering, sheep should be turned into the field to eat a portion of the leaves and stalks and to tread down the crop, in order that it may the more readily be ploughed under. Sheep are particularly fond of this plant, and it is extensively cultivated on the continent of Europe and in some parts of Britain for the purpose of feeding, and they readily fatten upon it. As a green manure it is excellent for wheat and grain in general. In feeding sheep with succulent rape there is some risk of the animals blowing, whichh is caused, as in cows on clover, by the generation of gas in the stomach. Among the means of preventing this, the sprinkling of salt over the plants is said to be beneficial, and the animals should not be turned in, especially at first, on empty stomachs, or in wet weather.

Flax Cultivation.

Editor of the Agriculturist.—There has been a club got up in this place, for the general improvement of the settlement, wherein is debated what kind of cereals and other crops it is best to raise, and the most improved method of doing so. Some of the farmers have an idea of raising flax and hemp, but have no information of a practical character as to the best mode of doing so, upon which they can rely. If you would give us such information upon the subject as may be in your possession, you would much oblige,

Yours, &c., J. A. McDowall.

Demorestville, March 1851.

Remarks.—We copied an able article on the culture and management of flax in the February and March numbers of the *Agriculturist* of last year, pages 75 and 104, from the Irish *Agricultural Review*, which, although written for Ireland, will convey all the information requisite, making proper allowances for differences of climate, soil, &c., to the cultivator in Canada. We refer our correspondent to that article, and to others which have appeared at various times in this journal. Land for flax should be in good condition. It should be sown as early as the season will permit, say at the end of April or beginning of May,according to circumstances, not of course till the weather is favorable, and the soil in proper condition. The Riga seed is considered the best, and should be sown about a bushel and a half to the acre. Great care should be taken that the seed is good, and free from weed seeds. The ground should be harrowed smooth before the seed is sown, and then it should be well harrowed in with a light fine harrow. The cultivation in fact is not essentially different from that of any of our ordinary spring crops. The same soil and mode of treatment for instance which might be relied upon to produce a good crop of barley, might also, with slight variation, be expected to afford the same result in flax. The rotting and preparation for market is an art, which would require some space to explain, and we cannot do better than refer to the article above mentioned. Messrs. Perine, Brothers, Conestoga, Co. Waterloo, who grow probably a greater quantity of flax than any other parties in Canada, amounting to several hundred acres annually, furnished the following statement to the Board of Agriculture, and which appears in the Transactions, in reference to some flax seed, for which they took a premium at the Provincial Show of 1858. The statement will convey the information desired by our correspondent and his friends, in a condensed and practical form. It is as follows:—

The sample of Flax Seed exhibited by us at the late Provincial Exhibition, heid at Toronto, was grown in the town of Woolwich, County of

Waterloo, C. W., upon a soil termed by the farmers in this section "clay loam," which is the prevailing soil of the county. It is vegetable mould, with a very small proportion of sand, mixed, by cultivation, with clay. The subsoil is exclusively clay. We have found that soils of this kind are the best for the growing of flax. Sandy soils, however well adapted to raising wheat and other crops, are less reliable for flax. Neither are heavy clay soils well adapted to growing the flax crop. The success of a crop upon either of the last named soils depends too much upon the peculiarities of the season. But we have met with uniform success upon the "clay loam."

The cultivation given flax land, before sowing, is about the same as for other spring crops, viz: once ploughing and thorough harrowing. We used no manure on the field upon which this sample was grown. This sample is known as the "sapling seed." We usually sow seventy-four pounds, or one or one-half bushels per acre, harrowing it in thoroughly. We sow broad-cast, about the first of May. This sample was sown the 3rd of May. We give flax no other cultivation than as above stated. We harvested about the 25th July, pulling it by hand, and tying it in bundles about four inches in diameter. We then set it on end in bunches of fifteen to twenty bundles, seed ends up,—untill dry enough to thrash.

The yield of this sample per acre was twelve bushels of fifty-six pounds. Yield of fibre was but little short of three hundred and twenty-five pounds per acre, which we consider a pretty fair yield for dew rotting.

We are growing, annually, about four hundred acres flax, and prepare the fibre for the cloth, thread, and twine manufacturer.

Boards of Agriculture of Upper and Lower Canada

We copy the following official notice from the Canada Gazette of March 9th.

BUREAU OF AGRICULTURE AMD STATISTICS,
Quebec, 2nd March, 1861.

The following gentlemen have been elected Members of the Boards of Agriculture for Upper and Lower Canada for the year 1861, under the 22nd Vict. Cap. 32—(Consolidated Statutes):

UPPER CANADA.

Hon. D. Christie,
A. A. Burnham, Esqr.
Hon. A. Fergusson,
W. Ferguson, Esqr.

LOWER CANADA.

Jos. E. Turcotte, Esqr.
Major Campbell, C. B.
Hon. U. J. Tessier,
Hon. L. V. Sicotte.

WILLIAM HUTTON,
Secretary.

Spring work, the Provincial Show, &c.

EDITOR OF AGICULTURIST.—I have a few thoughts for the consideration of your readers. First, I would say to all my brother Farmers: get your farming implements in order, as the season of labor is now at hand, but do not be too fast about sowing, as you may look for a cold and backward spring, with the wind hanging around the north, and frequent flurries of snow, during the greater portion of the months of April and May.

I would also suggest to the Local Committee at London, a plan for the arrangement of field roots for exhibition, at the approaching Provincial Show, which is to take place in their city. My plan is to make three tiers of shelves, the lower tier to be the widest, the next to the bottom not quite so wide, and the top one the narrowest. Then I would divide these by partitions, thus making them into three rows of boxes, and these should all be numbered. By this arrangement Mangel Wurzel, could be put in the lower range of boxes or shelves, turnips in the centre, and the potatoes and carrots in the top or the uppermost tier. By the boxes being thus numbered, each person will readily know where to find his own roots. In Hamilton last year, our roots were first put into the palace, then they were carried into a tent by parties who were not as careful as they might have been, mixing one person's roots with others, and in some cases the tickets got misplaced, and some lost both roots and tickets. This of course was not pleasant, moreover many of the roots were crushed and spoiled by people walking over them and standing on them; such derangements as these will tend to prevent people from taking roots to shows.

BEES AND HONEY.—Mr. Jacob Temple of the Township of Glanford, who is one of my neighbors, had last year one hundred and nineteen swarm of bees, sold one thousand four hundred pounds of honey at 12½ cents per lb, $11 worth of bees-wax, and one skip of bees for $5, all of which realized the handsome sum of $191, besides supplying his family and visitors with an abundance of this delicious article.

And in addition to all this he has wintered 105 swarms of bees; who can beat this?

STEPHEN KING.
Ryckman's Corners, March 26th, 1861.

Agriculture: Its Past, Present, and Future.

(*Continued from page* 165.)

1600 TO 1660.—Matters moved slowly during this period. In agriculture, gardening, and manufactures, England was surpassed by several other countries, particularly by Holland and the Netherlands. These were the most industrious

countries in Europe; and their population had been longer trained in those habits of order which are essential to industrial pre-eminence, and in which ours was deficient. Our Dutch and Flemish neighbors improved us in fen drainage, and in reclaiming land from the sea: they also introduced new seeds, and improved our agricultural practice. Implements and usages still varied in every country, and almost in every parish. Bligh, in his "Improver improved" (1652), pointed out the advantage of growing clover for cattle; and Sir Richard Weston soon after published an account of the cultivation of turnips in Fanders, by which cattle and sheep might be fattened in winter. The woollen was still the most important branch of non-agricultural industry. Hackney-coaches made their first appearance in 1625, there being only twenty for the metropolis and its neighbourhood.

1660 TO 1760.—Our manufactures continued to improve by instruction from other countries; and the exportation of wool was now prohibited. Spitalfields, in London, now produced silk manufactures; and Frenchmen, at Ipswich, made fine linen, which sold at 15s. per ell—an enormous price, looking at the then great value of money. Agriculture also advanced. The historian says: "The state of things to which the Revolution of 1688 put a termination, was favourable to the development of agricultural industry during the present period. Other political circumstances also favoured the landed interest; and for eighty years after the Revolution, England, as we have seen, was a corn-exporting country. From 1697 to 1773, the total excess of exports amounted to 30,968,366 qrs. of corn, upon which bounties were paid of not less than £6,237,176. From 1748 to 1752, the average quantity exported was 643,961 qrs annually. The bounty paid in 1750 amounted to £324,176. Fresh land was brought into cultivation, and in 1710 the first Enclosure Act was pas sed. In 1697 a duty was laid in England on malt, and the same duty was extended to Scotland in 1713. In 1710 the winnowing machine was introduced from Holland: in Scotland its use was denounced from the pulpit as impious. The thrashing machine was first employed in the northern parts of the island about the same time. No instrument for saving labour hasmade such slow progress; and in many extensive districts its use is unknown even in the present day. In 1732 Jethro Tull commenced is experiments in drilling and horse-hoeing on his farm in Berkshire; but thirty years elapsed before they excited much practical attention, and before the really valuable parts of his system began to be adopted by intelligent agricul turists. Towards the close of the period, the extension of the turnip husbandry was already effecting the most important revolution in the history of modern agriculture. Those improvements were also commenced which have gone far towards eradicating the defects of the ancient breeds of domestic animals in this country. Bakewell, the great improver of live stock, began his experiments about the year 1760. The writings of Evelyn, published near the close of the last perod, had awakened a taste for horticulture and planting. Gardens had become a luxury, on which large sums were expended. The cottage of the labourer began to be considered incomplete without a plot of ground for the cultivation of vegetables; and a great increase took place in the quantity and variety of vegetables consumed by tbe labouring classes. The farmer who did not provide plenty of greens, peas, and beans for his servants to eat with their salt meat, was despised for his parsimony. By the middle of the century the cultivation of the potato had become almost general in every part of England, and the prejudice against its use had been nearly removed; but in some quarters premiums were still resorted to for the purpose of bringing this root into consumption amongst the poor."

1760 TO 1860.—This being decidedly the most progressive era in the history of British agriculture, I have annexed a chronological list of the many important agricultural events of that period—which progress was still mainly owing to our great manufacturing advance, and consequent rapid increase of population. Judging of the future by the past, what are we to expect in agricultural progress from 1860 to 1960, with a population of 50 or 60 millions, instead of 30 millions? Our population was, a century ago, probably not more than six or seven millions; now it is thirty millions. The mind naturally asks, How long is this manufacturing increase to go on, and when shall our manufactures have attained their climax, and when shall commence their deline? Because then shall, indeed, begin the decline of British agriculture. Begging pardon for this digression, I must again quote from the historian of that period: "In 1784 roads had improved, and Mr. Palmer started the first mail coach; previous to this 380 towns got their letters only three times a week, and 40 towns had no post at all, but now they get them daily. From 1785 to 1800 there were 683 Acts of Parliament relating to roads, bridges, &c.; 196 to canals; 834 to enclosures, draining, &c.

Legislation affecting Agriculture.—Our senators appear to have been constantly attempting to set agriculture in order; according to their own notions, by Acts of Parliament. They do not appear to have succeeded very well in their objects, for most of the Acts fell into desuetude, or were evaded; some of them would sound oddly at the present day, such as: No tenant should rent two farms. No tenant-farmer should have more than 2,000 sheep. 1538, That the King was to have half the profit from all land converted from tillage into pasture until a suitable house was built upon it. Every cottage was to have four acres of land; and no more than one family in each cottage. There was an Act

to restrain the excessive use of malt, and justices were empowered in quarter sessions to suppress the making of malt and the number of maltsters. Farm-houses that had decayed were to be rebuilt compulsorily, and 20 to 40 acres attached to them. Roast beef at Christmas appears to have been a luxury of modern times—thanks to turnips, mangel, cake, clover, and other winter food; formerly, as soon as the depasturing season was ended, the fat animals were killed and salted, to prevent their becoming lean again—the hay being required for cows and young growing animals. Bullocks and sheep, too, were then a long while growing to perfection for the butcher, much as it is now in many foreign countries, whose agriculturists—when they visit England—express surprise that our live-stock should be so large and so fat at so early an age.

Roads, Canals, and Railroads.—One hundred years ago we were without either, and in winter the country was impassable. Arthur Young, in his tours, execrated the ruts four feet deep on what were called roads in his time. I wish time would permit me to transcribe his graphic description of the difficulties of locomotion and intercommunication. After carriages were invented the nobility and gentry had their "footmen," who ran by the sides of the carriage, and with their long sticks, which are now used for ornament, propped up the carriage when in danger of turning over.

The Government Drainage Loans.—If evidence were wanting of the necessity for aggregating capital in the hands of great companies, for the purpose of agricultural improvement, we should find it in the eagerness with which the firstGovernment loan of two millions sterling was taken up and made use of. Our keen Scotch friends were so alive to its advantages that they took the whole, and our less 'cute Southerners were too late in their application. So in the second loan of a million, a portion, was reserved for the tardy Englishmen. A noble duke, a great and acute improver, who had an immense estate in Scotland, told me that he had a large slice of the first loan, and would have taken much more had he been permitted to do so.

The Establishment of the General Board of Health has had a most beneficial influence on the sanitary condition of the nation, but, oddly and inconsistently enough, the tendency of its operation is to deprive the British people of their food; for the only means by which the national food can be permanently produced is by means of those very excrements which the Board of Health Act does not direct to be applied to the soil, but which are wasted in polluting our rivers. The calamitous national effects which must ulti mately result from this suicidal system have been already fully commented upon, in the paper I had the honour to read before you, "On the Sewage of Towns as it affects British Agriculture"; I will, therefore, only say that, if the Legislature does not interfere to compel a different application of the sewage, I trust that the landholders and farmers of this kingdom will exert themselves to prevent so fatal and so palpable a waste of their substance.

The New Poor-Law of 1834 saved this country from desolation and agriculture from destruction; it taught the landholder and his tenant that property had its duties as well as its rights, and that agriculture was never in greater error than when it hoped to save itself by the non-employment of human labour. It also proved that to pauperize the labourer by paying his wages as alms, was to destroy his self-dependence and demoralize his character.

The Tithe Commutation Act of 1836 opened the flood-gates for investment and improvement, where they would not otherwise have entered. It has, also, removed an element of embitterment between the clergy and their flocks, and has greatly promoted the cause of religion and kind feeling. It caused the conversion of many woods and wastes into food-producing soil. Tithes were first imposed upon the Mercians in the latter part of the eighth century, by their King Offa, and the tax was extended over all England by King Ethelwolf in 855. Owing to the great extent of forest and waste, the total must have been small. Tithes were applied to the repair of churches, the expenses of worship, and the relief of the poor, as well as to the maintenance of the clergy. Pious individuals, however, contributed lavishly with lands, &c., and so enriched the church. This is now prevented by the law of mortmain.

Richard Cobden and Sir Robert Peel.—I do not venture to give an opinion on the much vexed political question involved by their names, for that is very properly forbidden by the rules of our Club; but, practically, free-trade has done for our country an enormous good. It has awakened the slumbering and heretofore unsuspected powers of the British agricultural lion. We all must well remember that the anticipation of a ruinous and impossible competition sorrowed the minds and angered the feelings of those who hought they saw in free-trade the loss of their tcapital and ruin of their families. But fear and despair gave way to reflection, and to the comprehension of his exact comparative position. The British farmer, like the British manufacturer, faced the difficulty, and has sustained the competitive race by rapid improvement. That great race, although sustained, will be more than won by unheard of and future progress, and half a century hence our agricultural grandchildren will look back upon the condition of their progenitors much as we do on ours of the past age.

The Act for the Enfranchisement of Copyholds will gradully sweep away the old feudal reponsibilities, and give security to improvers. A copyhold farm of my own is subject to a live

heriot at my death, and no doubt when that occurs, the steward to the lord of the manor will claim my best horse or bullock, as well as 1½ year's rent.

Implemental Improvers.—We owe to Tull the drill and horse-hoe, to Bell the reaper, and to Meikle the thrashing-machine. The two last were Scotchmen. It is hardly possible to overrate the important benefits these implements will confer on British agriculture. The time and money they save largely aid us in the successful competition with foreigners. It is a singular but significant fact that although Mr. Bell had used the reaper (invented by his brother, the Rev. Patrick Bell, still living at Carmylie, near Arbroath, who in 1828 received a £50 prize for it from the Highland Agricultural Society) for thirty years, no one seemed to know any thing about it; and when his machines, Americanized, appeared in the great exhibition of 1851, they were regarded as curiosities and novelties. The public trial of them, on my farm, in 1856, in the presence of a distinguished company, at once launched them into practical use. I have used one of them ever since.

Agricultural Implements and Machinery.—If I wished to convince agriculturists of the importance of steam, I would in their presence ask the implement makers how much they would enhance their prices if compelled to go back to manual labour or horse-power as a motive force? The answer would probably be, "It is not a question of price, for we could not produce enough even at an advance of 50 to 100 per cent." As I wander through the implemental labyrinth at our great shows, I ponder in my mind whether farmers ever entertained this question, and applied it to their own case. We no longer see the farmer or his men making their own wooden plough and other tools at home as in ancient times; but the steam-blast, the steam-hammer, the steam-circular saw, and the steam-turned lathe, have transformed our blacksmiths' shops into gigantic and money-making factories, whence agriculture derives the cheap and effective means of a successful competition with less advauced corn-growing countries. It would be ungracious to omit honourable mention of the Ransomes, Garretts, Hornsbys, Claytons, Howards, Barretts, and others, who have so admirably met the mechanical demands of modern agriculture. It is my lot to welcome many foreign agriculturists, and as I catechize them, I often wish that I had by my side the agricultural alarmist. He would hear them say, "We have no roads, or we cannot use them in bad weather; we have the old wooden plough; we never hoe our corn, our men do not understand this machinery; we do not drill our corn; we keep our sheep three or four years before they are fat; we use no oilcake—our animals live on straw in the winter; we are very far from a market or river; we have no railways or canals; we grow three, four, or five bushels for one." A brother of a neighbour of mine emigrated to Amerida, and, writing to his brother, said, "I expect to see something of the country, for so-and-so is going out with a load of corn to market (Chicago); he will be gone three weeks, as it is 50 miles away." This I know to be a fact. It is a variety of these difficulties which beset the foreign cheap producer; and it is the reverse of all this that comforts and profits the British farmer.

The Establishment of Farmers' Clubs and Agricultural Societies has had a most beneficial influence on agricultural progress, which has been stimulated and improved by competitive exhibitions, by the reading of papers on Agricultural subjects, by the discussions following thereon, and above all, by the diffusion of those readings and discussions by means of the agricultural press. It is a painful, unaccountable, and not very creditable fact, that the only society in Britain that forbids the free and public reporting of its discussions and proceedings is the Royal Agricultural Society of England! In other respects it has conferred great benefits on British Agriculture, especially by its itinerating annual exhibitions for live stock and machinery. Its "Journal" has also done good service. The same good results have followed from the High land Society and its "Journal;" and the Irish Agricultural Society, and its "Journal," and their exhibitions. It would be doing an injustice to Scotch Agriculturists not to compliment them on the talent displayed at their discussions, resulting, no doubt, from those more abundant educational facilities which have existed in Scotland, compulsorily, more than in England. Probably this was the cause of their "Agricultural Journal" appearing so many years before that of the English Society.

The Smithfield Club, by its early and original Exhibition of Live Stock, deserves especial commendation as the pioneer in animal competitive exhibitions, which have dispelled self-sufficiency and developed animal perfection. Among the greatest benefactors to agriculture stands

Baron Liebig.—If an accurate account could be taken of the quantity and value of the additional food produced through his discoveries, the world would be grateful, and we should look upon him as a great benefactor to mankind. By the light of his great mind, the darkness of agriculture, with regard to the nutrition of plants and of animals is being rapidly dispelled. Like a great magician, he has taught us to convert bone and mineral apatite, into milk, cheese, mutton, and beef. He has taught us that the earth on which we tread forms an indispensable portion of animal and vegetable structure. He discovered floating in the passing breeze the fat and muscle of our bodies. The once exhausted pastures of Cheshire owe to him their fruitful regeneration, and every Cheshire cheese should

in gratitude bear his impress. As an eminent chemist remarked to me the other day: "he has knocked down all the old skittles"—meaning the old erroneous agricultural theories. He has supplanted them by imperishable truths. He has pointed out to us, in perspective, why a "peppering" of guano rivalled the massive dung-heap. He has entreated us to believe that the waste of our excreta through our sewers is equal to an enormous exportation of corn and meat without receiving its value in return. I am a firm believer in his mineral theory. Agriculture will at some future age, raise a monument to his memory as the Sir Isaac Newton of agricultural discovery.

(*To be continued.*)

American Cheese and Butter.

From the Farmer's Magazine.

There can be little doubt that before many years are over, the dairy produce of the United states and Canada, will be received in enormous quantities in the English markets. Taken as a whole, no country presents greater facilities for the dairy farming, and no country has so large a proportion of its population engaged in agriculture. As a consequence, no country should have a larger surplus of dairy products for exportation, and if hitherto the surplus has been trifling, it must be owing to transient causes.—There must be difficulties which are inseparable from what may be termed the infancy of the newer States, and when overcome, these States, which practically give no attention to dairy farming will do so, and add their contribution to the supply of cheese and butter. Two prominent difficulties may be named. First, it is desirable to get as much land as possible into cultivation, and the settlers' means being limited the one object necessarily engages his attention. He does with as few stock as possible, and what milk his cows yield (should he have any) is consumed in his family or sent to the nearest town or village. The second difficulty arises from the prevailing ignorance among American settlers, as to the way in which cheese and butter should be made. Much as the agricultural shows have done in the way of example, and in disseminating information, it is scarcely credible how much remains undone. The struggling class of farmers, who are by far the most numerous, and to whom farming is a new occupation, take little or no interest in the shows, and the little cheese and butter which they make is so inferior as to be only saleable at a price that barely yields a profit. Under these difficulties the newer States, no matter what their facilities may be for dairy farming, have hitherto produced less cheese and butter than they have consumed. Instead of contributing to the general stock, they have diminished it, and Michigan, Illinois, Minnesota, and Iowa have bought freely of the dairy produce of Ohio, New Jersey, New York and Pennsylvania. The indifferent and deficient cheese and butter of Canada have been sent into the United States, or exported to the United Kingdom, while Canadian wants have been supplied from the abundance and prime qualities of New York.

This practice, necessary though it may have been, and still to some extent may be, has proved injurious to an enterprising and numerous class of farmers. Western and Canadian cheese and butter once said to be inferior and all but worthless, the bad name has adhered to them, and really good lots have, as a rule, gone with the really bad, commanding no better price.—No inducement may be said, therefore, to have existed for improved dairy farming, and a custom in the Canadian butter trade will serve as an illustration of how the matter stands. Canadian butter, it is clearly necessary to say, is made in the summer season, the farmer providing himself with a supply of firkins, into which he places the butter as it is made, spreading a little salt between the different makings. As soon as a few firkins have been filled, they are sent to the dry goods shop, or some other shop, at which the farmer supplies his domestic wants, and the net weight is passed to the credit of the account, at generally the munificent price of sixpence a pound. At this price the shopkeeper can scarcely lose; and should butter become scarce he has the chance of realizing a good profit. Nothing is, however, to be made by the selling of a firkin or two, and lot after lot is accumulated in the shopkeeper's cellar, until, probably, a few hundred firkins are in hand.—This, be it observed, is done during the summer, when the temperature is high, and when the least exposure reduces the butter to an all but fluid state; and unless salt has been used too freely, the butter when it comes to be looked at in the winter, in a frozen state, is sour or rancid. Thus improved dairy farming has been repressed by a mere custom in the trade, which originated when the quality of the butter was bad, and when the quantity produced was small. The maker of good butter was placed upon the same level as the maker of bad butter, and butter that was really good was spoiled by neglect when it left the farmer's hands, and before it was placed upon the market.

It is satisfactory to observe, that this untoward state of things, is being changed, and that American dairy produce is in a fair way of getting rid of the bad name that has been so long attached to it. Within the past few years a class of men possessed of ample means, and to whom the making of cheese and butter is familiar, have found their way to Canada and the United States. These men, availing themselves of the facilities that now exhibit for sending what they have to market, have declined the services of the drapers and grocers and others,

and sent their cheese and butter to New York, and Boston, and elsewhere direct by railway.—Need the result be told? Well prepared Western and Canadian butter now commands the highest market price; and dairy farming has received in the course of the present season an extension which is scarcely credible. Milk has ceased to be bestowed upon the hogs, or to be wasted in the household; and milch cows are in great request. In short, dairy farming, which hitherto has been neglected on the American continent, is at length found to be highly profitable, and is being prosecuted in a way that will be felt before long in England. No better proof of this can be afforded than by a comparison of the statements of exports from the United States and Canada.

EXPORTS OF BUTTER FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND.

1858.	Tons.	1859.	Tons.
September	10	September	10
October	71	October	10
November		November	1
December		December	1
1859.		1860.	
January		January	23
February		February	125
March	23	March	278
April	30	April	125
May		May	222
June	88	June	495
July	76	July	437
August	7	August	414
From Sept. 1, 1858 to Sept. 1, 1859	307	From Sept. 1, 1859 to Sept. 1, 1860,	2141

EXPORTS OF CHEESE FROM THE UNITED STATES TO GREAT BRITAIN AND IRELAND.

1858.	Tons.	1859.	Tons.
September	396	September	722
October	555	October	729
November	257	November	650
December	287	December	684
1859.		1860.	
January	137	January	364
February	49	February	408
March	292	March	448
April	127	April	466
May	56	May	301
June	60	June	905
July	179	July	991
August	824	August	884
From Sept. 1, 1858 to Sept. 1, 1859	2599	From Sept. 1, 1859 to Sept. 1, 1860,	7542

BUTTER EXPORTS BY SEA FROM MONTREAL.

To October, 1860, 22,828 firkins; to October 1859, 7,871 firkins; to Oct. 1858, 4534 firkins.

The exports from Montreal do not represent the aggregate Canadian exports, but only a small portion. They represent the increase of the year, however, as fully as the aggregate will do when fully ascertained.

Such an increase in the dairy produce of one year may be said to be without example. Nor is there any doubt as to the ratio of increase being maintained in future years. The Canadian farmer may turn unlimited herds of cows into the bush to feed in summer; and the Western farmer has even more scope and less trouble upon the prairies. Cheese and butter can be produced in America without limit, and at a less cost to the farmer than in any other country; and now that the production is being taken in hand in a spirited way, the supply will be enormously increased. Nearly 7,000 tons more dairy produce have been received this year than last; and there is every reason to believe that the quantity to be received next year will at least be doubled.

[An extract from the above article appeared in a former number of this Journal.]

Agricultural Intelligence.

Meeting of the Board of Agriculture.

The board met pursuant to notice on the 13th ult., at the office, Toronto, at noon.

Present: Messrs E. W. Thomson, R. L. Denison, A. A. Burnham, Hon D. Christie, Hon G. Alexander, Hon H. Ruttan,; John Barwick, President of the Provincial Agricultural Association; Professor Buckland; Dr Beatty, President of the Board of Arts and Mannfactures: J. E. Pell, Vice President of do.

The Secretary submitted a communication from the Secretary of the Bureau of Agriculture at Quebec, showing that Hon D. Christie, Hon. A. Fergusson, A. A. Burnham. Esq., and Wm. Ferguson, Esq. had been re-elected members of of the Board.

The President for the past year, E. W. Thomson, Esq., delivered a brief address on retiring from office.

The Secretary took the chair.

It was then moved by Mr. Christie, and seconded by Mr. Denison.

That the thanks of this Board be given to Col. Thomson for his valuable services, and that he be re-elected President for the current year — Carried.

The President elect then took the chair.

Moved by Mr. Denison, seconded by Mr. Barwick.

That Hon. A. Fergusson be re-elected Vice President of the Board.—Carried.

The Secretary then submitted the following communications:—

From Wm. Ferguson, Esq., Kingston, stating his inability to attend the meeting of the Board, in consequence of County business requiring his presence at Kingston.

From James Keefer, Esq., Strathroy, Secretary of the West Middlesex Agricultural Society; James Wright, Esq, Guelph, Secretary of the South Wellington; Joseph Thomas, Esq., Barrie, Secretary of the North Simcoe; and E. A. McNaughton, Esq., Newcastle, Secretary of the West Durham Agricultural Society,—all submitting certain amendments desired by their respective Societies in the Agricultural Statute.

From Thos. Wilson, Esq., Kingston, Secretary of a Society claiming to be the legally constituted Electoral Division Society of the City of Kingston, dated January 26, 1861, detailing certain proceedings which had taken pl ce at the Annual Meeting of that Society in January, and which had resulted in the organization of another Society, also claiming to be the legal Electoral Division Society.

From John Shaw, Esq., Kingston, Secretary of the other organization claiming to be the legally constituted Electoral Division Society of Kingston, dated Janury 26, 1861, giving the names of the officers and directors elected by the Society of which he is the Secretary.

From Mr. Wilson, dated Feb. 13, referring to the subject of his former communication.

From Thomas Briggs, Esq., Kingston, President of the first mentioned Society at Kingston, dated March 1st, referring to Mr. Wilson's communication, and requesting the decision of the Board as to which of the two organizations is the legally constituted Electoral Division Society.

From Mr. Wilson, Kingston, of March 11th, on the same subject.

From Mr. W. McBride, Secretary of the Local Committee for the Provincial Exhibion of 1861, at London, dated Feb. 2nd, submitting the names of certain persons to be added to the Local Committee,

From Thomas Powell, Secretary of London Township Agricultural Society, requesting to know if the contribution by that Society of its funds for the year in aid of the erection of the buildings for the Provincial Exhibition would entitle the members to be admitted as members of the Agricultural Association for the year.

From James Johnson, Esq., Chairman of the Local Committee, London, enquiring if the members of Local Societies would be admitted as members of the Association, on the Society paying over to the Association their subscriptions and government grant for the year.

[The Secretary stated that he had replied to both these letters in accordance with the resolutions adopted at the meeting of the Board in February, 1860.]

From R. T. Pennefather, Esq., Secretary to the Governor General, acknowledging receipt of the resolutions of the Board at last meeting, in regard to the application of the donation of £200 by His Royal Highness the Prince of Wales to the Association.

The Committee appointed at last meeting to consider the amendments necessary to the Agricultural Statute submitted their report.

The Board adjourned at half-past one for an hour.

The Board resumed at half-past two.

The Report of the Committee on the revision of the Act was taken into consideration, and adopted, with some amendments, and the Secretary was instructed to transmit the same to the Minister of Agriculture.

Resolved, That when the Board adjourns on this occasion it do stand adjourned until 4th April next at noon, at the Tecumseth House, London, and that the Secretary acquaint the Chairman of the Local Committee with this arrangement.

Resolved, That in respect to the communicatations from Kingston, this Board hereby instructs the Secretary to inform the parties that it does not under existiug circumstances feel itself in a position to decide the matters at issue, at the same time recommending a friendly compromise therein.

The Board adjourned to 9 A.M. to-morrow.

THURSDAY, March 14th, 1861.

The Board resumed at 9 A. M.

Present: The President, R. L. Denison, H. Ruttan, J. Barwick, D. Christie, Professor Buckland, Dr. Beatty, J. E. Pell.

The communication from Mr. McBride on the subject of the local committee was considered and concurred in.

The several communications on the subject of the Act were also discussed and disposed of.

Professor Buckland stated to the Board several interesting facts relative to agriculture and the management of Exhibitions that he had observed during his recent tour in Europe, and which will be communicated to our readers more in detail in future numbers of this Journal. He thought that the progress made of late years in Canada in agricultural pursuits would not compare unfavourably, when all circumstances are taken into consideration, with older and consequently more advanced countries. He considered that we are in the right track, and that our Provincial Exhibitions, though still susceptible of many improvements, are as creditable as they are beneficial to the country. In France and various parts of the United Kingdom, he met with many who evinced great interest in Canada and its future prosperity, and found several influential individuals connected with societies who will be happy to exchange with us specimens of agricultural productions, and implements; an arrangement he hoped the Board would be enabled to carry out as soon as they possess the requisite accommodation. He had two or three opportunities of a peesonal inter-

view with Professor Dick, The Principal of the Edinburgh Veterinary College, on the question of procuring a competent practitioner and teacher to reside in Toronto. Dr. Dick expressed a lively interest in the object and will do everything in his power towards its accomplishment. There is therefor reason to hope that something of a practical character will ere long be commenced in relation to this important undertaking. Professor Buckland offered some suggestions, which had occurred to him from observations made abroad that might tend to increase the efficiency of the Board and the Provincial Exhibition and Societies generally, which will be more fully considered hereafter. He also referred to some information he had received from parties who had experimented on the grains, grasses, and new varieties of potatoes distributed by the Board, which, with the results of his own experience, he would embody more fully in a future communication.

Some conversation then took place on the subject of obtaining a veterinary teacher, and it was agreed that Professor Buckland should correspond with parties in Europe in reference to this matter.

The subject of the intended great exhibition at London, England, in 1862, was considered, and it was

Resolved,—That a Committee of the Board of Agriculture, consisting of Colonel Thomson, Professor Buckland, and Colonel Denison, be appointed for the purpose of co-operating with the Committee of the Board of Arts and Manufactures, in reference to the representation of Canada at the great exhibition in 1862.

Resolved,—That in addition to the vote of thanks passed at a previous meeting of this Board, to His Royal Highness the Prince of Wales, for his liberal donation, and for the great interest he was pleased to manifest in the agricultural prosperity of this Province, he be now elected a life member of the Agricultural Association of Upper Canada, and presented with a life member's medal.

Resolved,—That with a view to ascertain the practicability and utilityof procuring suitable accommodation for permanent offices, ware-house, and museum, a committee be now appointed to ascertain how the object can best be accomplished, and at what expense, and to report at next meeting of the Board that shall be held here, and that Messrs Thomson, Denison and Buckland be such committee.

A communication was submitted from the Toronto Horticultural Society, requesting the Board to embody in their proposal amendments to the Act, a clause to the effect that Horticultural Societies, possessing and occupying a certain quantity of land for the purposes of a Botanical Garden, and performing certain other acts, should be entitled to receive the same public aid as Electoral Division Agricultural Societies

Resolved,—That the Secretary be instructed to acknowledge the communication from the Horticultural Society, and to direct the attention of the officers of said society to the provisions of the Act 20 Vic. Cap. 32, Sec. 56, and to the encouragement for Horticulture, &c, therein contained.

Resolved,—That the President, Treasurer, and Professor Buckland be a committee on behalf of the Board to prepare the Prize list for the exhibition of 1861, and that the Board of Arts and Manufactures be requested to appoint an Associate Committee on the Arts and Manufacturing department.

The Board then adjourned.

West York.—The County and township societies in this Riding having come to the conclusion that it is unprofitable for them all to fritter away their means in holding four or five separate spring shows, in as many localities, have decided this spring to unite their strength in one show, to be held at Wes on, on 24th inst.; and to offer a larger amount in prizes than usual on these occasions in spring. We think this a very judicious move.

Short-Horns in 1860.

"We have before us," observes the *London Agricultural Gazette*, "a list of Short-Horn sales in 1860. They do not indicate any degeneracy in the breed, its market value, or repute. Is it not a remarkable thing to know that 1,000 animals of all ages were sold last year by one auctioneer for more than 40 guineas each: that no fewer than 340 reached prices between 40 and 400 guineas each, 84 of the number averaging £131 5s.!"

We condense the following facts from tabuted statements furnished by the above-mentioned journal.—

Eighty-four animals sold at public auction at thirteen public sales amounted to £11,025, being an average of £131 5s. each.

The following table again gives the classification of the animals according to price:—

	No.	Value Received. £	s	d.
Cattle sold above 100 guineas ..	47	7638	15	0
" between 90 and 100 gs.	17	1653	15	0
" " 80 and 90 gs.	20	1732	10	0
" " 70 and 80 gs.	37	2807	14	0
" " 60 and 70 gs.	40	2628	3	0
" " 50 and 60 gs.	68	3765	6	0
" " 40 and 50 gs.	112	5074	13	0
" " 30 and 40 gs.	207	7221	18	0
" " 20 and 30 gs.	305	7583	2	0
Under 20 gs.....	297	4234	2	6

At 25 sales, from March to October, 1150 animals were disposed of. The aggregate amount

realized was £44,339 18s. 6d.; being an average of £88 11s. 2d. each!

"Even these large figures," observes the *Gazette*, "do not nearly express the sums realized by the breeders of first class stock. It is not always the successful breeder who disposes of his stock by auction. Larger prices are given by private contract than are paid in competition before Mr. Strafford. Enormous sums, too, are given for animals sent across the seas, and probably four or five times the amount here specified change hands annually between buyers and sellers of pure bred Short-horns in this country."

The above lists do not give any adequate idea of the enormous prices which are given for animals of any fashionable family or strain in the breed.

"We have before us a copy of the Annual Catalogue of the Branches Park Herd, the property of Lady Pigot, in which the pedigree and personal history of the several animals specified are detailed. Among them we find "Queen of Athelstane," now two years old, purchased of Mr. Douglas, of Athelstaneford, for £525; and "Victoria," now five years old, purchased of Mr. Barnes, of Moynalty, also for £525. In the notice of the 2d Duchess of Gloster, bred by Mr. Jonas Webb, calved January, 1857, got by Cheltenham, (12,588,) it is related that Mr. Jonas Webb has sold five yearling bulls by this bull, at 200 guineas each, for the colonies, and nine more at prices varying from 100 guineas to 180 guineas each, and eight heifers at over 100 gs. each. These prices we add to the list given last week in illustration of the high market value which a well-bred animal maintains. The publication from which we extract them is not the mere "Annual Catalogue" which it is entitled. It is most interesting as a record of what energy and perseverance will accomplish—of the failures which cannot check them, and of the successes which ultimately reward them. Let us also add that it is useful as a sort of annual appendix to the Herd Book. It would be of great service if of all our leading Short-horn herds similar annual catalogues were issued. They could never be a substitute for the Herd Book, which must periodically appear as the ultimate and authoritative book of reference; but they would be useful as intermediate and supplementary to a work which they could never supplant.

In her preface Lady Pigot writes thus of the history of her herd:

"I began in the winter of 1856 by purchasing 'Happiness,' a heifer bred by Mr. Jonas Webb, giving 250 guineas for her. She only brought a bull calf, and sank away out of condition soon after, and appeared in that plight at the Royal at Salisbury. Eventually she recovered her appearance, and went to Ireland to the Dublin Spring Show in 1858, where she took the 1st prize and silver medal; also the gold medal as best cow. She came home however to die, having been literally *bled* to death by the farrier, *for cold* caught on the passage across.

"This purchase I made not knowing *one* tribe from another, and having no purpose or aim in view. I lost in the first year above £600 from deaths and inexperience, but I was determined to persevere, and at Mr. Wetherell's sale in 1859, I gave 300 guineas for Stanley Rose. I then began to question whether buying in the desultory way was the right course to pursue, and would it pay me, and so I went to Warlaby, and made outrageous offers, for animals *not to be bought*. I wrote in the same strain to various people possessing pure bred cattle of Mr. Booth's blood. Everywhere I was refused; and at last I saw that those who were lucky enough to possess these cows were quite determined not to part with them.

"My energy and perseverance, however, have at length been rewarded, as I have never allowed any hindrance to come between me and the purchase of particular tribes, and I have now succeeded in establishing a herd, the pedigrees of which lie in these pages. And now I give it as my opinion that nothing pays the farmer half so well as stock, if property kept."

The following are notices of some of the cows and heifers in the list:

"The Queen of Athelstane, rich roan, calved February 1859 (bred by Mr. Douglas, of Athelstaneford) got by Sir James the Rose, 15290, &c. She has just perhaps earned her reputation, being as is believed, nearly the best heifer in England. Lady Pigot gave 500 guineas for her to Mr. Douglas. She combines rare quality and style with great length and constitution, and is supposed by judges not a little to resemble the beautiful but unfortunate 'Queen of the May.' The Queen of Athelstane took her first prize at Saultoun, East Lothian, in 1860, and the first prize, also as a yearling, at the Highland Show at Dumfries. She was first again at Alnwick, first at the Lancashire show at Keighley, beating Col. Townley's prize heifer, and was first at the Craven show, at Skipton, 1860. In the Frederick cross is some of Col. Townley's best blood, while Ringlet is in a direct line from the celebrated Bracelet, none of which tribe remain either at Warlaby or Killerby. Sir James has two crosses away from the 'Royal Blood,' but is from the famous Paris prize cow 'Rose of Summer,' of the Mantalini tribe."

Rise of Farm Rents in Scotland.

Of late years there has been an increasing tendency to higher rents both in England and Scotland; particularly in the latter. We see it stated in a late number of the *Scotsman* that in the district of Auchtararder, that rents have of late greatly augmented consequent upon the increasing demand for farms; and this appears

the buildings and lime being exhausted with my to be more or less the case over the country in general. From 30 to 50, and in some cases as much as 70 to 80 per cent of increase in rent on that of old leases is obtained on their renewal, and this frequently to new tenants. Much of this increase, however, is attributed to the application of capital by landlords and tenants in the permanent improvement of farms, such as under-draining, the straightening and renewal of fences, the erecting of new buildings better adapted to existing wants, &c. It must not therefore be inferred that the greatly increased rents which are now obtained in certain localities are just so much clear gain to the landlords,—who in most instances have expended large sums of money in the permanent improvements of their estates.

A correspondent of the *Agricultural Gazette* refers to this rise as the result of improved estates,—and not as the result of any greater market value in the estates of the same intrinsic value. This we believe to be only *partly* true. Our recent opportunity of ascertaining personally how land was selling and renting in England, led us to conclude that the tendency of rents to rise, a law that has been more or less general of late years throughout the United Kingdom, arises in the first place from the greater competition for farms caused by increased wealth and population, and secondly from their much greater productiveness brought about by the judicious expenditure of capital in the various modes of agricultural improvement, that have so strikingly characterized modern British husbandry. In some parts of England where only a small amount of capital had been expended in permanent improvements we found that the fee simple of land had risen since 1847, from 15 to 25 per cent, and rents, where farms had been re-let had experienced a similar advance. The writer in the *Gazette* observes:

"Thus—if you melt a gold sovereign, and if, after adding to it five shillings' worth of gold, you sell the whole for twenty-five shillings, will that entitle you to say, that gold has risen twenty-five per cent? Certainly it will not, neither will a rise in rent entitle you to say that land in the abstract has increased in value. In 1841 I took my farm for 19 years at £800 a year. A complete new set of offices were built during the first three years, and my performing the entire carriages was considered a fair equivalent for these offices during my lease. The whole farm was drained in 1842, 3, 4, and 5, with government money, the interest of which was £240 a-year. During my lease, I also went over two-thirds of the farm with lime, and otherwise improved it greatly; and now that my lease is out, I am quite prepared to pay, in shape of rent, £1100 a-year, and yet you are not entitled to say that I am offering an advance of 37½ per cent, or in point of fact I have been paying £240 a-year of drainage interest, which now takes the shape of rent, and my interest in lease, I am content to pay £60 a-year for them during a new lease, and you are not entitled to call this an advance rent. In order to ascertain the real advance in the value of land, you must find a farm that has neither been drained nor limed, and has had no new suit of offices during the last lease and the per centage of rise will not be so astounding."

The English Harvest of 1860.

We publish below from the *Mark Lane Express* of February 25th, some deductions which appear to have been most carefully made from upwards of three hundred statistical returns up to the 18th of Feb., including every county in England and Wales. The document is rather long, but its contents cannot fail to interest our readers. The results of the harvest in Scotland and Ireland are somewhat better, we believe, than those of England; but the whole of the British Islands, including a large portion of northern Europe, suffered almost unprecedentedly from the continuous wet and cold of the past year. In Britain nothing like it has occurred since 1816. The prospect of next harvest cannot be otherwise regarded than discouraging. Large breadths of land prepared for wheat last autumn could not be sown, and much that was planted has as yet an unpromising appearance. The *Express* observes:—

Our readers have now had time to examine the important Report of the late Harvest as given last week, and of which we now offer a condensed summary, exhibiting in a few lines an approximate view of the general result. Before we enter upon this we may say that all the gentlemen to whom application was made, were selected with due regard to their respectability and competence to give a correct and comprehensive reply to our enquiries. It may be further explained that they have generally extended their report over an area of from six to eight miles beyond their own immediate locality; by which means, having had a due regard to a proper division of the counties, as correct a view as possible of the whole country has been obtained. In the subjoined summary of their returns one great point has been to collate them with those of the Board of Trade—with the sales of corn of all kinds for the year 1860; the last of which, although only published this morning, we are enabled to give in our paper of to-day. We have thus been enabled to ascertain whether the deficiency or otherwise prevails chiefly in what may be termed the cereal counties, and from which the great bulk of the grain is procured. The deduction we draw is, that both

wheat and barley have proved generally most deficient and damaged in the districts where the largest breadth of those grains are sown; and this is further proved by the falling off in the weekly sales in those counties this season, as compared with that of 1860, as well as by the prices sustained, notwithstanding the largest importation ever effected. On the other hand, the defect in the quality is proved by the wide range of prices, which in wheat is frequently as much as from 30s. to 35s. per quarter, and in barley to fully an equal proportion. In arranging the following table, it will be seen that there are few cases in which *a good quality* is reported. It is possible that in some instances in which "average crops" are put down, the quality may have been good; but, as this is not declared, and being fully aware that owing to the unfavorable season, even a large proportion of the "average crops" were stained by the wet, and unfit in their present condition for the miller, we have omitted noticing, as in "good condition," those stated to be so, which, however, will be found to be very few in number. The following is a summary of the whole of the returns:

	Under average to the Extent of					Average.	Above average.	Failures.	Totals.
	⅔	½	⅓	¼	1–5				
Wheat.....	3	27	35	77	95	74	—	—	313
Barley.....	12	16	16	35	64	142	15	—	300
Oats.....	—	7	15	34	20	179	31	—	206
Beans	9	16	11	25	24	121	46		252
Peas	9	24	19	27	32	68	12	18	219

	Above average	Average.	Under average and diseased.	Under average not diseased.	Half average.	Under half average.	Failure.	Total.
Potatoes.....	6	34	53	21	39	124	14	291

	Over average.	Average.	Under average.	Very bad.	Failures.	Totals.
Turnips.....	6	63	145	87	11	312
Mangolds.....	4	23	106	149	18	300

On the whole the deficiency in the wheat crop appears to be very great, there being only 74 cases of average yield, whilst the bulk is one-fifth to one-half deficient. But even this does not represent the whole deficiency, or even the greater part of it. The main deficit is in the weight and quality of the grain, an inferiority without precedent since 1816. With regard to weight it ranges from 47 to 60lbs. per bushel, a very small proportion coming up to the latter weight, and the average being probably not more than 56 to 57lbs. per bushel. This is from six to seven pounds below the average of some seasons; and will of itself make a difference of at least 10lbs., per bushel in the produce of flour, or 80 lbs. per qr. So convinced by bitter experience are the millers of this fact, that they have ceased, in many instances, to purchase native wheat, except at such prices as the farmers will not at present submit to. The consequence is that, notwithstanding the enormous supply of foreign wheat since harvest, the drain upon the stock to supply country millers is beginning to tell heavily, and a cessation, in great part at any rate, of the importations, will cause the granaried corn to disappear before the new crop of the Continent can be brought down from the interior to the seaboard.

Again, though, owing to the coldness of the atmosphere during the harvest, a very small proportion of the wheat was sprouted, the bulk of the crops never ripened properly, and much was cut when very green. In the northern counties of England the harvest was protracted beyond precedent, many hundreds of acres being still in the fields in November, and even up to the beginning of the new year. Now it is impossible for the grain under such conditions to be fit for market, or even for human food; and we find, therefore, that a large deficiency will arise from this cause. Such wheat, even if not utterly spoiled, can never yield any tolerable produce of flour, either in quantity or quality, and is totally unfit to be worked up alone. This is in fact the case with a very large proportion of the crop in every county in England.

And further, by collating our reports with those of the Board of Trade, as stated above, we find that the largest wheat-producing counties are Norfolk, Suffolk, Essex, Cambridgeshire, Yorkshire, Nottinghamshire, Kent, Berkshire, Hertfordshire, and Gloucester. In all these the deficiency in average yield and condition is fully as great, and in some cases greater, than in the non-cereal districts. We shall probably have to refer to this part of the subject again at a future time, when we shall be able to offer the proof of this deduction by the falling-off of the sales of both wheat and barley this season (since harvest) as compared with the previous ones.

It may then be safely asserted, taking the deficiency in the yield per acre in the produce of flour per quarter, and in the loss from the weather and the protracted harvest, that the wheat crop will prove to be one-third at least less than an average, or five to six million quarters deficient. This, with an annual consumption of nearly five million quarters beyond the native produce, will render necessary an importation of ten million quarters between the harvests. Such was the deficiency as estimated in the *Mark Lane Express* on the eve of harvest, a result, however deplorable, that has fully justified our calculations; supported as they were at the time by so few of our contemporaries.

The barley crops have suffered in an equal degree with the wheat, as regards the damage done by the rain to the quality. From all parts of the country reports in this respect are unfavourable, there being a very small proportion of that grain fit for malting; whilst even that to be considered so, is complained of by the maltters on account of its immaturity, which prevents it sprouting freely.

Oats appear to have been less affected by the weather than either the two principal cereals, and but for the continuous rains would have been a splendid crop. Still, owing to the violent storms that prevailed before harvest, a considerable amount of damage was sustained, and but few of the fields of this grain were cleared in a condition to render it fit for the market until March. We do not, however, in the best seasons grow sufficient for the consumption, and we must this year have a large importation to meet the demand, which annually increases.

Both beans and peas have suffered more from the weather than any other produce. The former were almost universally cut before they were fairly ripe, and housed in a damp condition; so that it has been impossible to thrash them properly, or to do anything with them when thrashed, unless kilndried. There is no question, however, but that beans would have been the largest and best crop ever known had the harvest been favourable. As it was, a large proportion of them were still in the field in the northern counties in December, in some cases with six inches of snow upon the stooks, in common with wheat, and other unharvested crops. There will still be a good supply of them after the March winds have dried the stacks.

The pea crop never was worse. In many cases they were shelled in the field, and in the majority were so damaged as to be worth little, whilst eighteen cases of entire failure are reported.

The accounts of the potato crop are the worst of all. The disease appears to have been universal this season, and to have destroyed a greater amount than in any year since 1846, to which the last has been aptly compared. We much question whether one-third of an average crop will be fit for human food. Only 40 cases of "average" are noted out of 291, whilst 163 are half and under half a crop, and 14 total failures. Even of those stated to be average crops many of them are much diseased, so that they cannot be estimated at what the report would otherwise warrant. The enormous deficiency will throw the masses of the population more upon bread, and this will still further press upon the wheat crop. The high price of potatoes is the certain criterion of the deficiency, and this extends to Ireland as well as England. We shall probably be able to import in the spring, but it is a question whether in sufficient quantities to meet the demand, as the disease has been prevalent on the Continent as well as with us.

Both turnips and mangolds are bad, particularly the latter. The late-sown turnips improved before the frost set in, but the very circumstance of their continuing to grow to so late a period was against them when the frost came. They were all the more tender and susceptible of its influence. This was also the case, and to a more fatal extent, with the mangolds, which unfortunately in many instances were left in the field and caught the frost, always more destructive to them than the turnips. More than three-fourths of the latter and nine-tenths of the former are stated to be under an average. This offers but a poor prospect for the graziers, many of whom will scarcely be able to keep their stock through the season. It is unfortunate that the failure of the mangold crop should occur, now that, owing to the uncertainty of the turnip of late years, it had begun to come more into use; being in ordinary years a far more certain plant in its early stages of growth, as not subject to the fly or other destructive insects.

Upon a careful review of the whole produce of the past season, we believe that the prices of either vegetable or animal food cannot possibly be lower before another harvest, if even then. It is certain, whatever may have been effected since Christmas, that previously not one-half of the usual breadth of wheat was sown; while that put in was with the land foul with weeds and saturated with water, and consequently in a very ungenial state for the progress of vegetation. To that may be added such evil influence as the inferiority of the seed from immaturity and damp, for it has been found that this was much longer than usual before it appeared above ground. While, therefore, we may hope for the best, we must prepare for the worst; and when trusting in the bounty and goodness of Providence, keep a good look-out ahead for whatever contingency may happen.

Horticultural.

The Garden.

It is seldom that the operations of the kitchen or flower-garden can be advantageously commenced in this climate till the beginning of April; preparatory measures have of course to be previously taken as early as circumstances will allow, but it seldom happens that much can be done by way of putting in out of door crops till the middle or end of the month. In this respect the character of the season, the state of the soil in relation to mineral composition, dryness, exposure, &c., will frequently occasion a difference of two or three weeks. The proper time for putting in garden crops, and indeed field-crops,

ought not to be determined so much by the day of the month, as by the state of the ground, and the temperature of the air. Ground ought never to be worked or sown, if it can profitably be avoided by waiting a reasonable length of time, when in a wet and unkindly state. The success of the crop will materially depend on getting a well pulverized seed-bed, judiciously manured, and not to deposit the seed till the soil and the atmosphere have attained to a sufficiently warm temperature, when germination will be quick, and the early growth healthy and rapid. In this and succeeding numbers we shall cull from the sources within our reach, such information as may appear suited to the generality of our readers, few of whom, we trust, are without the luxury and advantages of a garden. Communications from professional or amateur gardeners will always be thankfully received. We have of late been favoured with a few very valuable articles of this kind, and trust the number will increase.

On Planting.

The season has now arrived for transplanting fruit, and decidious trees, in general. As soon as the frost is out, and the surface of the ground sufficiently dried, this important operation should be proceeded with without delay. Many people plant too late, hence one among the various causes of failure. But on the other hand, it is not advisable to perform the operation till both the soil and air are sufficiently dry and warm.

It should be carefully borne in mind in transplanting, that a tree is a living and highly organized being, and that its future growth and health will mainly depend upon the manner of performing the operation, and the kind of treatment to which it may subsequently be subjected. Judging by the careless manner in which these things are too commonly done, and the ill success consequent thereupon, one might imagine that trees are regarded in no higher light than stones, or simply dead matter. Till higher and correcter notions obtain, and better attention is paid to the promotion and preservation of the growth and health of plants, the raising of both fruit and forest trees will continue to be in great measure a failure. Not only should the soil be properly selected and prepared, and the work of transplanting carefully and correctly done, but the *after treatment* must be equally attended to. Protection, judicious pruning, &c., are absolutely necessary to any large and permamnent measure of success. We subjoin the following brief directions for properly transplanting trees from the catalogue of *Mr. Geo. Leslie, of the Toronto Nursery*, who has had long and extensive experience in matters of this nature, and whose capacious nursery grounds every stranger coming to this city, would do well to visit:

1. Dig the hole large enough to receive the roots entire, easily and without bending.

2. Pare smooth on the under side, with a sharp knife, all bruised and broken parts of the roots.

3. Let one person hold the Tree upright in the hole, whilst another is filling in the soil. The surface soil made fine, should be first but in, carefully spreading out every root and fibre, that each may meet the soil, and shaking the Tree gently, so that no vacancies or crevices are left.

4. The hole being filled, press the soil gently but firmly with the foot, and the Tree thus planted should stand about on inch deeper than it did in the Nursery; deep planting is fatal.

5. Mulching is indispensable. Put around each Tree, on the surface, to the extent of a foot or more, a depth of five or six inches of long manure, after the whole are planted.

6. In dry weather, in Spring, it may be necessary to throw a pail of water in the hole when half filled, allowing the water to settle before filling it up. For some years keep the ground, a little way around each Tree, loose and free from grass or weeds. No cattle must be allowed in the enclosure till the Trees are large.

Staking—The moment the trees are planted, and particularly in exposed situations, Trees should be tied to a stake, with hay or straw rope to prevent them shaking about, or blowing sideways, before they take root. All crooked Trees can easily be made straight by tying judiciously to a stake.

Twenty-five to thirty apart each way, is the proper distance to plant Apple Trees in an orchard.

The Tree Peddling Business.

Editor Agriculturist.—A "Fruit Grower's" account of the Picture book gentry in the tree business, brought to my mind the following anecdote, which I received some four years ago from the lips of one of those geniuses, who gave it as his opinion, that the Canadians were the most gullible people on the face of the earth. He said, "I have taken some two thousand dollars in orders from the vicinity of the city of Hamilton, and I will give you one instance of my mode of proceeding:—On the mountain at

Hamilton there lives a certain local magnate, to whom I sold a lot of fruit and ornamental trees, amongst them quite a number of Horse Chestnut, and in making out my bill, I added after the name Horse Chestnut, (*Carthagenian*) $1,00 each; but Mr. Amateur, thinking it was rather a big price, said he could buy them from any of Nurserymen in Canada at 50 cents each, quite as good trees, and with far better roots. Fully expecting this however, I said with some little pretended warmth; Sir, I beg your pardon, but I defy you to get them in Canada at all, why sir, the Carthagenian Horse Chestnut is quite a new thing, and I will give you now, a dollar apiece for every true Carthagenian Horse Chestnut you will bring to me; 'Oh!' says Mr. A., beg pardon, beg your pardon, Carthagenian,—Carthagenian Horse Chestnut are they? certainly, certainly, and then he gives me the cash without another word."

"Then," adds the man with the pictures, when relating this story to me, "God knows I never heard of Carthagenian Horse Chestnut before."

CHARLES ARNOLD.

Paris, C. W., March 23rd, 1861.

On Fruit Culture.

EDITOR OF THE CANADIAN AGRICULTURIST.—In your issue of January 1st there is an article headed, "Mode of destroying the Gooseberry Caterpillar." The plan there spoken of is one which I could not advise the adoption of. I have known similar means being used to young apple-trees in England, with fatal results. I have been a grower of gooseberries in England, and partly in Canada for the last 30 years, with abundant returns. In England, I had bushes upwards of 40 years old, that *every year* produced a most excellent crop of fruit. My method of cultivating the Gooseberry is this:—Early in the spring, I move the top soil from the roots, give a moderate portion of stable manure, covering it with soil. I then give each bush a slight pruning; taking out part of the old, and shortening the luxuriant branches of the new wood. Afterwards, when the buds are full, and ready to open, I dissolve about ½lb. of common salt in two gallons of water; with this, from a watering-pan, I wet the whole bush; immediately after I dust the bush with quick lime until it is well covered with the lime.

The effects produced by this dressing are these: The birds will not injure the buds; if insects are generating it will destroy them; and if the stems are infested with moss it will destroy the vegetative properties of the moss, the rains will wash it off, leaving a clean, healthy, fruit-bearing bush.

The foregoing is with pleasure at your service.

In your issue of February 16th, Mr. Ball, of Niagara, asks six questions on the planting and taking care of fruit trees.

I would say, on question 1. That in transplanting apple or pear trees, I would head back every branch to the 4th bud in luxuriant growers, to the 6th or 7th in the hardy grower; cutting out the superfluous branches.

2nd. After the hole has been well prepared, no root should be deeper than one foot from the level of the surface. Each fibre should be placed in its original (horizontal) position, and equally occupy the space around the stem. After filling the spaces between, and slightly covering the roots with fine rich soil, add a moderate quantity of good manure, and finish with soil, giving the whole a slight treading, the top being a little above the regular surface.

3rd. Mulching the ground is good, after the first year. If the soil is loose around newly planted trees, and they are not secured by stakes, the winds frequently put them in disorder. Early in the spring of the second and future years, I would cover the ground about two feet around each stem with a good coat (6 inches thick) of manure; this method will effectually prevent injury, from the severest drouths. In the fall spread this manure over the other ground.

4th. I prefer a crop of Indian Corn for three or four years after planting: it keeps the land clean and cool, for the expansion of the roots; and protects the stem and top from the scorching effects of the sun. I planted 120 apple-trees in May, 1853, and by using Indian corn as a crop, I only lost four trees: it is now one of the best and most productive orchards in the County of Bruce.

5th. No doubt whatever that trees brought from a distance succeed better than those raised in the immediate neighbourhood. I have proved this in England as well as in Canada. I have an orchard in England containing upwards of 800 trees: part were from a distance; these made very superior progress to others from our own locality.

6th. Cattle will not destroy an orchard, if kept out of it: and he's a wiseacre, that allows his cattle to go in. Yours, &c.,

JOHN MOSELY.

Kincardine, March 16th, 1861.

Orchard Culture in the Northern Districts of Canada.

EDITOR OF THE AGRICULTURIST.—In a former communication on the subject of raising fruit in the northern counties of Canada, I promised some further suggestions on the manner of pre serving the apple tree from the evil effects of frost. I have come to the following conclusions with regard to this subject:

1. That our extreme frosts rarely injure the apple tree, and then only under one condition; viz: when there is no frost in the earth on account of the depth of the snow. In this case the roots of the tree are in a medium the temperature of which must be above 32°, whilst the stem and

branches are exposed to a temperature of 20° below zero, making a difference of over 50°.

9. That more than nine-tenths of the injury done to the apple-tree by the winter, arises from the slight frosts that occur after the tree has commenced its growth in the spring,—what are called *late frosts.*

The only remedy for the former injury is to remove from about the roots of the tree any snow that may fall in the beginning of winter, before the ground has become frozen.

To prevent the latter injury the following is the plan I would propose: —In the latter end of winter, before the frost leaves the ground, place a coating of coarse manure above the roots of each tree, to the depth of six or eight inches. Let it extend from the tree as far at least as the branches extend. Allow this to remain until the tree has blossomed; the greater part of it may then be removed and spread on the adjacent land. This will keep back the blossoming of the tree from ten days to two weeks by retaining the frost in the soil; and it would thus lessen in a great degree the chances of the tree being injured by the late frosts. I have seen this practiced on a small scale with admirable effect, and I firmly believe that were it universally adopted in Canada it would at once double the product of this invaluable fruit; and thus save to the country the present large importaion.

To plant an orchard in any back County of Canada the following rule will, in my opinion ensure success:—Choose the highest piece of ground convenient to your dwelling. If the soil is clay, or if it is some lighter soil, inclined to be damp, run a series of covered drains through the lot, in the direction you wish to plant your rows, one drain for each row. Do this the summer before you wish to plant your trees. Then, if the land is level, or a stiff clay, plant the trees on the tops of the drains; if not, plant them midway between them. Choose your trees from the *nearest* Canadian nursery. If they could be *properly* raised on your own farm it would be all the better. See that they are properly set out. Don't plant them yourself if you have never seen it done. Mulch the trees during the hot weather for the first two or three years. Keep the tops well pruned, and don't let the stems and roots become lined with suckers and sprouts. Observe the rules mentioned above for preserving them from the frost, and you will soon have an orchard producing yearly an abundant crop of fruit.

Would the fruit be worth the trouble? Let us see. One acre of orchard, the trees, once planted, will require less labour than any other acre on the farm for any crop whatever. If it contain 50 full grown trees, they should average 4 bushels each, making a yield of 200 bushels. Valuing these at 50 cents, (what we pay for the poorest apples in our back counties) this acre would produce yearly $100 worth of fruit. Add to this the the luxury of having the farm house furnished with pies and puddings, cider and jam and eating apples the whole year round, and who will think that it is not worth the trouble?

H. R.

Hints on Sowing Seeds, Transplanting, Watering, Insects, &c.,

[The following useful suggestions are taken from the *Descriptive Catalogue of Garden and Agricultural Seeds* by James Fleming, Seedsman and Florist, Toronto. The reader will find in them much information of a valuable and practical character, and pressed into a small compass.]

Sowing Seeds.—Warmth and moisture are essential, and seclusion from light is favourable to germination. The first care in sowing seeds should be to choose suitable ground, the proper season and state of the earth, and then to place them at such a depth beneath the surface as will ensure the requisite supply of moisture. In general all seeds should be covered more or less, according to their size and the advance of the season; late sowings require to be covered the deepest. The smallest seeds ought to be sown very shallow, in fine earth, and rolled or beaten firmly with the back of a spade.

The freshest seeds of some kinds often fail, from unseasonable and improper management in sowing, and other circumstances affecting their vegetation. When sown too early or too deep, while the ground is cold, wet, and heavy, they are apt to rot; when sown too shallow in a dry time, and late in the season, there may not be sufficient moisture to sprout them, or they may be dried up by dry winds or a hot sun after they have germinated. Sometimes insects destroy them before or immediately after their appearance above ground, so that the complaints occasionally made by the inexperienced are not always to be attributed to the quality of the seeds.

Soaking in warm water twenty-four or forty-eight hours, and then rolling in plaster or ashes will very much hasten the germination and growth of hard and dry seeds. It will give the plants a start of the weeds, and lessen a good deal the labor of cultivation.

To Prove Seeds, place a few in a pot of earth and keep it warm and moist. Onion Seed tied in a cloth and put first into cold water and boiled half an hour, will sprout in that time if it is good.

Transplanting should be done just at evening, or immediately before or soon after a rain. Make the holes with the *dibble,* hold the plant in one hand, and with the other bear the point of the dibble into the ground by the side of it, and press the earth closely to the *bottom* of the root, and shade with a shingle in sunny weather.

Watering.—The best time to water plants is

at sunrise or just at evening, and always use rain water when to be had. If well water must be used it should be exposed to the sun a day or two, until it rises to the temperature of the air, before it is applied. Water may be given to the roots at any time, but never should be sprinkled over the leaves in a hot sun.

Thinning is a very important operation.—Everything ought to be thinned very early, even in the seed leaf if the plants stand too close.—Another thinning may be necessary when they are more advanced, to give them room to grow stocky. All plants when crowded together, run up tall and slender: such never succeed so well.

Hoeing and Weeding.—It ought to be remembered that it is the easiest to kill weeds when they are small, and that it is better to hoe for this purpose soon after, rather than immediately before, a rain. It ought also to be remembered that Cabbage, Couliflower, and Brocoli, require *deep*, and that Onions aud Turnips require *shallow* hoeing; that Beets, Carrots and Parsnips, will put out side roots and grow scraggy if hoed deep after they are nearly grown; and

The rotation of Crops ought to be regarded in planting a garden. Fusiform or carrot-shaped fhat *earthing up* is more proper for fibrous than tor carrot-rooted plants.

roots should follow fibrous-rooted ones, and every succeeding crop should be as dissimilar to the preceding one as possible. Onions are an exception.

Frost.—Plants are more liable to be injured by frost in a dry atmosphere, and immediately after the ground has been worked. When frozen, plants may sometimes be preserved from destruction by a copious watering in the morning, before they are exposed to the sun. In spring and fall, when frosts are to be expected, look out for a severe one the first night after the clearing up of a rain storm, with the wind changing to the west or northwest.

Insects are troublesome and sometimes very destructive. Plaster of Paris, snuff, ashes, or soot sifted on Cucumbers and Squashes when wet with dew, is very useful against the *striped bug*. Lime, road dust, ashes, or snuff, scattered over young Cabbages and Turnips, will sometimes prevent the ravages of the *black fly*. Rolling the ground after sowing, answers a good purpose, but the best preventive is a thorough sprinkling of the plants just at night with whale oil soap suds, in proportion of one pint of soap to seven and a half gallons of water. This will kill *cabbage lice* and all other *aphides*. It is sure death to all tender insects when forcibly applied with a garden syringe or rubbed on with a brush. For the want of whale oil soap, strong soap suds may be used. Salt is sometimes sown in the drills with Onion seed to drive away the *grub*. Fine salt strewn broadcast over Cabbage is the best application we know of for destroying the little *green cabbage worm*. Ducks, chickens, and toads destroy a host of insects, when suffered to inhabit the garden.

Transactions.

(*Continued from page* 190.)

LAMBTON.

County Society.—One hundred and thirty four members; amount of subscriptions, $137.60; balance from 1858, $392.76; deposited by townships, $266; received for wheat sold, $200; government grant, $598.-61; received for a bull, $43; sundries, $3.50; total received, $1641.47. Paid township branches $612.75; paid for agricultural papers for members, $66.50; paid for wheat, and freight &c., on do., $203.23; paid for two bulls purchased for society, and expenses on do., $145; paid for land, $272.95; sundries and incidental expenses, $92.91; balance in treasurer's hands, $248.13.

Extract from Report.

At the commencement of 1859 the prospect of all classes was gloomy indeed; very few farmers had sufficient grain to maintain themselves till harvest; flour had to be purchased at famine prices and carried into all parts of the country. When spring came there was a general scarcity of seed, few comparatively having sufficient to sow their own fields, and many had no means of purchasing that which was brought from other parts of the country. In this emergency Parliament passed a Bill, enabling County Municipalities to borrow money for the express purpose of supplying seed where it was needed. The municipalities took advantage of this Act, and were thus enabled to supply those who needed aid. The cold chilly weather in May, and the severe frost in June appeared most unpropitious; but the splendid weather which succeeded restored all that was not destroyed, and a kind and gracious providence granted us an abundant harvest. Several kinds of crop were better than ever before in this county. Of winter wheat very little was cultivated, but that little was in several cases a good crop. Spring wheat was a fair average crop. Oats were much above an average both in quantity and quality—the same may be said of peas and barley. Roots of all kinds were particularly good. Fruit was a total failure, having been destroyed by the frosts in June. Hay was scarcely half an average crop—the yield of Hungarian Grass when not sown too early, was very large—in many cases over 4 tons to the acre. Indian corn and buckwheat were in many cases in-

jured by the frosts of June and early part of September. But even with these drawbacks there is in the country an abundant supply of food. This year instead of buying, we are sending to market very considerable quantities of pork, flour, oats, &c., &c. Business of all kinds has greatly improved and the prospects for the future are brighter than for some years past.

It is said that the beautiful statue lies hid in the rough block of marble—that in order to appear in all the grace and beauty of most finished workmanship it only needs to have the superfluous matter removed by the hand of the sculptor. In like manner we may say that the beautiful and fertile field yielding its annual golden harvests, lies hid in the dense forests of Canada. The superfluous matter is removed by the strong arm of the patient settler, and the forest, once the home of the wolf and the bear, becomes in course of time, transformed into fruitful fields,and becomes the home of an industrious and prosperous population.

The future resources of such a country as this can, at least in the present state of our agriculture and manufactures scarcely be over estimated. To bear a part in assisting to develope these latent resources is the object of this and kindred societies. Let us do our part manfully and cheerfully, and in the result we will not be disappointed.

TOWNSHIP BRANCHES.

Bosanquet.—One hundred and sixteen members; amount of subscription, $116; grant from township council, $100; share of government grant, $103; received for use of bull, $10; total received, $330. Amount paid for purchase and expense of breeding stock; $324.19; incidental expenses, $13.84; balance due treasurer, $8.03.

Moore.—Seventy three members; balance from 1858, $18.33; amount of subscriptions, $75; public grant, $102.25; total received, $195.58, Amount paid in premiums, $125.-08; expenses, $45 27; balance in hand, $25.23. The directors report the society in a prosperous condition, and the results of farming operations very encouraging.

Plympton. —Eighty four members; amount of subscription, $84; balance from previous acc., $51.90; total receipts $135.90. Paid in premiums, $116.50; expenses, $12.-85; balance in hand, $6,55. Speaking of the plowing match, the directors say:

"It is rather discreditable to the mechanics of this county, that there was only one plow used at the plowing match that was made in the county, the others being made by Mr. Walker in Westminster, and the reason assigned by a great many for not competing was that they had not a plow fit to perform good work."

Sombra.—Forty one members; amount of subscription, $41; balance from previous year, $60. 37; public grant, $55; total received, $156.37. Paid for keep of breeding animals, $35; premiums, $27.25; expenses, $8.17; balance in treasurer's hands, $85.95.

NORTH LANARK.

County Society.—One hundred and eleven members; amount of subscriptions, $220; balance from previous year, $129 93; deposited by township branches, $139 25; government grant, $479 98; total receipts, $969 16. Paid township branches, $326 85; paid for agricultural publications, $93; premiums, $347; general expenses, $132 40; balance in treasurer's hands, $69 91.

Extracts from Report:

The crop-viewers make the following remarks: "The long continued and exeeedingly dry weather which prevailed during the summer, has materially injured the spring crops, where the soil rests on the flat limestone rock, and also on the stiff clay land, in the eastern section of Ramsay and Pakenham; but on the Western part of Ramsay and Pakenham, and the eastern side of Lanark, where the metamorphic rocks prevail, the crops of all kinds are excellent, and fall wheat will be considerably above the average.

Several fields of fall wheat examined, will yield not less than from thirty to forty bushels per acre, and it will be of a very superior quality. The fly appears to have done but little damage, and very little rust or smut could be discovered.

Spring wheat, oats, barley, and peas, although deficient on the light lands, will, on the whole, be a fair average; in several instances, very fine fields of spring wheat were observed, particularly in the Boyd settlement in the Township of Lanark, and on the 7th line of Ramsay.

Potatoes, ruta baga, mangel wurzel, and other root-crops, all cultivated pretty extensively, have suffered from the dry weather, but still have a fine appearance, and will probably give very nearly an average crop.

The improvement in stock of all kinds is very perceptible; but there is ample room for still further improvement.

Orchards have been planted very extensively, and are beginning to produce fruit; but many of the trees were either killed or injured last winter, and the late frosts this spring will very much reduce the crop for the present year.

A Nursery for the supply of young fruit trees has been established by Mr. Robert McFarlane, in Ramsay, which will, we trust, be able, with Mr. Blair's, in Dalhousie, to supply a better description of trees than those imported from the United States.

Underdraining is very extensively practised; and, as a result, many fine fields of grain ma now be seen, where, a few years ago there were bogs and swamps, producing flags and rushes. Among many examples of industry and perseverance in draining may be mentioned Mr. James Dickson of Pakenham, who has reclaimed a large quantity of land on his farm by cutting drains.

The mixed system of agriculture practised by the farmers in the County of Lanark, where a fair proportion of the various grain and root crops are cultivated, and animals of different kinds kept for these products, is, we conceive, much superior to that in the western section of the Province, where many farms are devoted almost exclusively to the production of wheat, by which the soil must very soon be exhausted, and where a failure of that particular crop is attended with the most disastrous consequences."

We have drawn very largely from the report of the crop viewers, not only because it concurs with our own views, but because they have had the advantage of personally visiting a great section of the Riding, and consulting many of our best farmers on the topics here introduced, we would further remark, that the hay crop, of which the viewers have taken no notice, has been almost a failure, owing chiefly to the spring frosts and dry season. Many will feel severely the want of this article.

We would remark that labor-saving machines are being very generally introduced, and a great part of the mowing and thrashing is done by machinery. Before concluding we would make one further extract from the report of the crop-viewers :—

"For many years after this county was first settled the people had to struggle hard for their existence; but the turning point has been reached; and it is evident, from the fine farms, the good stone and frame houses, and all the other comforts and conveniences with which the industrious are surrounded, that they now enjoy, not only the necessaries, but many of the luxuries of life in abundance."

TOWNSHIP BRANCHES.

Lanark.—Sixty-nine members; subscription, $69; balance from previous year, $152.25; received for seeds sold, $68.42; public grant, $92.86; sundries, $12; total received, $394.53. Paid for agricultural papers, $24; paid for seeds, $70.23; premiums, $64; paid for two Rams, $22; expenses, $18.79; balance in treasurer's hands, $195.51.

Pakenham.—Thirty-nine members; subscriptions, $72.25; balance from previous year, $8.27; public grant, $94.49; subscriptions for ploughing match, $21.25; total received, $196.26. Paid premiums, $158.76; expenses, $35.70; balance in hand, $1.80.

NORTH LEEDS AND GRENVILLE.

County Society.—Ninety-six members; subscription, $221.75; balance from previous year, $72 22; deposited by township branches, $235; received from Grenville Society, $12; Government grant, $479; total received, $1019.97. Paid township branches, $521; paid for *Agriculturist*, $5; premiums, $346.35; expenses, $78; balance in treasurer's hands, $69.62. The Directors report a gratifying progress in the agriculture of the county.

TOWNSHIP BRANCHES.

South Gower.——Sixty-two members; amount of subscriptions, $85; public grant, $105; total received, $190. Paid in premiums, $151.30; expenses, $38.70.

Oxford.—Seventy-six members; amount of subscriptions, $79; balance from 1858, $32.18; share of grant, $97; total, $208.18. Paid in premiums, $176.50; expenses, $22; balance in hand, $9.68.

Wolford.—Fifty-two members; subscriptions, $68; public grant, $86; total received, $154. Expenditure in premiums and expenses, $143,47; balance in hand, $10.53.

SOUTH LEEDS.

County Society.—Sixty-one members; amount of subscription, $62.63; deposited by township branches, $306; grant from Gananoque Society, $170,82; Government grant

$479.98; total received, $1019.43. Paid township branches, $593.98; contributed to Kingston Committee in aid of Provincial Exhibition, $100; paid in premiums, $269; paid for copies of *Agriculturist* for members, $23.40; expenses, $33.05.

Extracts from Report:

In this section, in common with other parts of Western Canada, the weather last summer was extremely dry. As a necessary consequence, the hay crop was very light. Great economy, however, was displayed in saving fodder; and straw, in place of being wasted, as been too generally the case heretofore, has to a large extent been saved and fed out.

The variety of wheat generally sown in this part of the country is that known as "Fife" or "Scotch." It has never been known to *rust* so as to injure the crop, and last year the yield was about an average. That which was sowed early succeeded the best. Some which was sowed late, did not ripen until it was injured by frost. On the front, where the land has been often cropped and become to some extent exhausted, the crop was rather lighter than usual; but a few miles back where the land is comparatively new, and has lost but little of its original fertility, the crop was very large. On the front the yield was from four to eight fold; a few miles back, a yield from twelve to sixteen fold was not uncommon.

Several members of the society, by way of experiment, sowed small quantities of wheat imported from France and Scotland. These gentlemen deserved credit for their enterprise, but unhappily the experiment was unsuccessful. There were two varieties from France—red and white—both rusted and yielded no crop at all. The variety from Scotland did a little better, but it rusted too, and the crop was almost worthless.

The oat crop was large, and of good quality. The same may be said of Peas, and the small quantities of barley and rye sowed yielded a fair return. The crop of potatoes was the best which has been known for years. There has been little or none of the rot which for so many years has proved destructive to this valuable plant, and the tubers are dry, mealy, and in every respect like the potatoes of the olden time. The few turnips sowed, were generally a good crop, and will be found peculiarly valuable when hay is scarce.

The Directors would notice that it has afforded them great pleasure to see so large and excellent a display of Agricultural Implements at the Exhibitions of the Society—all of home manufacture. They are proud to know that Gananoque, which may be regarded as the *capital* of this Riding, can now by the skill and enterprise of her manufacturers and mechanics furnish these implements of as good a quality and on as favorable terms as they can be supplied from any part of the Province.

TOWNSHIPS BRANCHES.

Bastard and Crosby.—Forty six members; amount of subscriptions, $161.45; balance in hand from 1858, $12.90; public grant, $158.75; total $333.10; paid in premiums, $253; expenses, $49; balance in Treasurer's hands, $31.10.

Gananoque.—Forty eight members; subscriptions, $92.50; balance from previous from previous year, $116.73; public grant, $89.13; total, $298.36. Paid for keeping a bull owned by Society, $30; prizes at plowing match $45.50; paid County Society in aid of exhibition, $170.82; balance on hand, $52,04.

Yonge and Escott,—Thirty two members; subscriptions, $48; grant, $46.75; total, $91.75. Paid in premiums, $58; Agricultural papers, $11.07; expenses, $14.12; balance in treasurer's hands, $8.56.

BROCKVILLE.

Electoral Division Society.—Amount of subscriptions, $275; public grant $240. Paid in premiums, $234. Balance in treasurer's hands, $111.99. The report is imperfect.

Miscellaneous.

What are Trees made of.

If we were to take up a handful of soil and examine it under the microscope, we should probably find it to contain a number of fragments of wood, small broken pieces of branches or leaves, or other parts of the tree. If we could examine it chemically, we should find yet more strikingly that it was nearly the same as wood in its composition. Perhaps, then, it may be said, the young plant obtains its wood from the earth in which it grows. The following experiment will show whether this conjecture is correct or not. Two hundred pounds of earth were dried in an oven, and afterwards put into a large earthen vessel; the earth was then moistened with rainwater, and a willow tree weighing

five pounds, was planted therein. During the space of five years, the earth was carefully watered with rain water. The willow grew and flourished, and to prevent the earth from being mixed with fresh earth, being blown upon it by winds, it was covered with a metal plate full of very minute holes, which would exclude every thing but air from getting access to the earth below it. After growing in the earth for five years, the tree was removed, and on being weighed was found to have gained one hundred and sixty-four pounds. And this estimate did not include theweight of the leaves or dead branches which in five years fell from the tree.

Now came the application of the test. Was all this obtained from the earth? It had not sensibly diminished: but in order to make the experiment conclusive, it was again dried in an oven and put in the balance. Astonishing was the result—the earth weighed only *two ounces* less than it did when the willow was first planted in it! yet the tree had gained *one hundred and sixty-four pounds*. Manifestly, then, the wood thus gained in the space of time was *not* obtained from the earth; we are therefore obliged to repeat our question, "Where does the wood come from?" We are left with only two alternatives, the water with which it was refreshed, or the air in which it lived. It can be chearly shown that it was not due to the water: we are consequently unable to resist the perplexing and wonderful conclusion—it was derived from the *air*.

Can it be? Were those great ocean spaces of wood, which are as old as man's introduction into Eden, and wave in their vast and solitary luxuriance over the fertile hills and plains of South America, were all these obtained from the thin air? Were the particles which unite to form our battle-ships, Old England's walls of wood, ever borne the world about, not only on wings of air themselves? Was the firm table on which I write, the chair on which I rest, the solid floor on which I dwell, once in a form which I could not as much as lay my finger on and grasp in my hand? Wonderful truth! all this is air. —*English Paper.*

Sanitary Science.

In New-York there is a "Sanitary Association," but although it objects are benevolent and deserve the support of all classes, we believe it has as yet been unable to effect much good. A meeting of its members was held at the Home for the Friendless on the evening of the 27th ult., at which a resolution was passed recommending the formation of a female sanitary missionary association for the city. On the occasion, several speeches were made. Dr. Harris spoke particularly of the importance of a public knowledge of the practical science of ventilation, light, economy and correctness in the formation of personal habits. The Rev. H. W. Bellows stated that there was great difficulty in gaining popular attention to sanitary reform, as it was a question involving many details. There was an unwillingness on the part of those who considered themselves very charitable persons, to stoop to the real work which charity requires. Hygiene is almost as little understood by the higher as by the lower classes. Rooms were not well ventilated and ladies' clothing was not worn in accordance with the laws of health. James T. Brady, Esq., spoke of the defective style of public houses. He stated that there were no cities in Europe where the places of refreshment were kept under ground, as in American cities. Several speakers, such as Dr. Muhlenberg and Dr. Griscom, gave it as their deliberate opinion that most of the degradation of the lower classes was directly traceable to evil habits, such as the drinking of ardent spirits and the chewing of tobacco.

Edwin Chadwick, Esq., of London, recently delivered an address on this subject, in which he stated that in several districts known to him, by a proper drainage within the houses and the use of water led into them by pipes, the death-rate had been reduced one-third annually. He said "I know one instance, in an agricultural district, and with laborers alone, where the death rate has been reduced to less than one-half, and within twelve in a thousand. From common lodging-houses, the enforcement, through the police, of sanitary regulations, typhus and diarhea, as epidemics, (whilst prevalent among the houses of the laboring classes), are banished. In our well-regulated district institutions for pauper children, those epidemic visitations which ravage the children of families of working men are almost unknown, and the death-rate is reduced to one-third that prevailing amongst their children. The death rate among British soldiers used to be 17.5 per 1,000 annually; now, by sanitary reforms, it is reduced to 4.7 per 1,000."

The city of Liverpool, in England, used to be one of the most sickly in the world, but owing to the scientific sanitary measures which have been carried out in it during the last few years it has become one of the most healthy. During the past ten years there has been a reduction of 30 per cent. in the mortality bill. This, certainly is a very important eubject, and yet it is very difficult to excite the public mind to give it proper attention.—*Scientific American.*

Curious Facts in Natural History.—"About thirty years ago the first crow crossed the Genesee River westwardly," so says a writer in the *Democratic Union*, and "that the fox, the hen hawk, swallow, and many other birds and insects, seem to follow civilization." Within thirty-six years the locust-borer made its first appearance in the United States, and as yet has not reached the locust trees of the South and West. It commenced its ravages on the east side of the Genesee River in 1830, and it was

seven years before it crossed to thewest side. The grain weevil began its course in 1828, and it progresses in the course it takes from ten to fifteen miles a year. Rose bugs have been so common in some of the Eastern States, that on their sea shores they have floated in windrows on the sands, having been driven into the sea by winds and drowned. The cedar or cherry birds were first noticed west of the Genesee River in 1828, and they are now great a pest as to induce many to give up the cultivation of cherries, especially near woodland. The curculio, which is indigenous to America, was first discovered by Mr. Gaul, the first editor of the *Genesee Farmer*, since which time it has disseminated itself over the whole county. The cutworm appeared in 1816 and 1821, (noticed as the cold years, when the whole northern country approached the brink of famine,) and are now universal. The Hessian fly was introduced, it is supposed, by the fereign mercenaries in 1777, on Long Island, from their baggage or in the forage for their horses.—*Working Farmer.*

The Ring Finger.—In the ancient ritual of marriage, the ring was placed by the husband at the top of the thumb of the left hand, with the words "In the name of the Father;" he then removed it to the forefinger, adding, "and of the Son;" then to the middle finger, adding, "and of the Holy Ghost;" finally he left it as now, on the fourth finger, with the closing word, "Amen." *Notes and Queries.*

Destruction of Birds Forbidden.—The destroying all birds, except game to eat, has been recently prohibited in many of the small German States, on the Rhine, and in parts of Germany. The motives urged are these:—Wherever the farmers have killed the rooks, jays, and even sparrows, the crops have been less than where they had been unmolested. Very able naturalists have examined this, and have reported that the vast quantity of the noxious vermin which the birds destroy, greatly exceed the small quantity of grain they destroy, in searching for the insects on which they feed.

Exploration of Australia.—Recent intelligence from Australia represents that the problem of crossing the continent from south to north has been virtually solved, and no question now remains that the land transit may be opened up, not only for the general purpose of commerce, but also for telegraphic communication. Mr. Stuart, who started on an exploring expedition last March, has returned, after crossing the country to a distance of about 1600 miles of Adelaide, and to within 300 miles of the Victoria river, where he was turned back by hostile natives. As he reached 100 miles further north than the point to which Gregory's expedition in 1856 descended from Victoria, the continent may be considered, by the joint results of these two surveys, to have been fairly opened up from one end to the other. Instead of an arid desert, it is described to be a practicable country throughout. Mr. Stuart and his companions suffered terribly from want, not only of water but food, and also from an attack of scurvy. The part of the route in which water was totally absent, however, was only sixty miles, in many parts there was fine grass, besides splendid gum and other trees, including at least four kinds of palm. A very large salt lake was also discovered in the interior, supposed from the blueness of its water to be of great depth. The Parliament of South Australia has voted £2,500 to enable Mr. Stuart to start again with a large party, and complete his exploration, and full particulars of the expedition are withheld lest some rival explorers in the other colonies should avail themselves of his information and snatch from him the triumph of final success. The event created great rejoicing at Adelaide, as opening a new field for enterprize and colonization.

A Secret to Farmers.—It is worth knowing that every keeper of cows may cause them to calve during the daytime, instead of night or day as it may happen, causing much watching and want of sleep. The simple method is:—When the cow is in calf, and the milk beginning to fail, till she is about "yelled," let no milk be taken from her during the day, or at night, but milk her any time in the morning, and let none be taken but in the morning; and when her time to calve is come, she will drop her young in the daytime. Two of our friends have tried this simple method, and have found it correct in every case. One who has eighteen cows has tried it these two years; and now they never think of sitting up at night.—*Fife Journal.*

Extraordinary Seizure of Bees.—The inhabitants of the New Forest in the neighborhood of Ringwood have long been acquainted with an eccentric character named William Cuttler, who some years ago quitted his farm, leaving the gathered crops in the waggons, until both the homestead, the grain, and the waggons, fell into complete decay, and erected a wretched hovel on some property belonging to the Earl of Normanton, at Ashley Heath, where he was locally designated the "Forest Robinson Crusoe." At this place he turned his attention to bee keeping. The bees proved a great annoyance to a neighbouring farmer, who represented the inconvenience to which he was subjected to the Earl of Normanton; but neither entreaty nor the offer of money or another piece of land on the part of the noble earl's agents could induce Cuttler to move. A warrant of ejectment was recently obtained, and it was placed for execution in the hands of a sheriff's officer. A few days ago the officer procured plenty of help, and proceeded to put the warrant into execution. He found between 200 and 300 hives of bees. How they were to be removed was a difficult question. Cuttler moved

among them in safety ; they lodged upon his arms and body without stinging him ; but the sheriff's representatives experienced a sharp reception. After some manœuvring they got Cuttler to the hedge bounding the place, as far as possible from the hives, which they were much afraid he would upset. He declared he was determined to stop ; and he was therefore put into a cart, the horse was driven off, and he was left on the highway, at a considerable distance from the place where he commenced his involuntary journey. Cuttler's wife, an invalid, was next carefully removed by some females. The bees could not be safely meddled with in the daytime, and it took the men three whole nights to remove the bees to a piece of Cutler's land, an orchard seven miles distant. They were stung severely, and were heartily glad when they had completed their novel and unpleasant task.—*English Paper.*

Indian Ferocity.—Death by fire is still inflicted by some tribes who are not yet converted to Christianity ; formerly it was a universal custom. But the Foxes and the Ojibbeways in particular had acquired a certain renown for the refinements they introduced in the practice of this frightful art. A young Fox warrior, son of an Ojibbeway woman, who had been carried off by his tribe, one day made his maternel uncle a prisoner. Wishing to show that he was insensible to the ties of relationship which united him to the Ojibbeways, he bound the arms and legs of his prisoner to two stakes fixed in the ground. He then lighted a great fire, as he said in derision, to warm him. When he roasted him on one side he turned him on the other. The body of the Ojibbeway warrior was soon nothing but one hideous sore. Then his nephew untied him, and said 'Return to your village and tell the Ojibbeways how the Foxes prevent their uncles from feeling the cold.' The man recovered, and succeeded in taking his nephew prisoner. He carried him off to his village, bound him quite naked to two stakes, and taking the skin of a reindeer, newly stripped off, to which a thick coating of fat still adhered, exposed it to the fire until it was completely lighted, he then threw it on the shoulders of his nephew, saying, 'Nephew, when I was in your village you warmed me at a good fire ; I in my turn give you this cloak to keep you warm.' The horrible flaming cloak enveloped the whole body of the unfortunate Fox, who was soon consumed, like those human torches with which the garden of Nero was lighted.—*Seven Years' Residence in the Deserts of North America.*

How to Make Money.—Let the business of every-body else alone, attend to your own ; don't buy what you don't want ; use every hour to advantage, and study to make even leisure hours useful ; think twice before you throw away a shilling—remember you will have another to make for it ; find recreation in looking over your business ; buy low, sell fair, and take care of the profits ; look over your books regularly, and if you find an error, trace it out ; should a stroke of misfortune come upon you in trade, retrench, work harder, but never fly the track ; confront difficulties with unflinching perseverance, and they will disappear at last ; though you should fail in the struggle, you will be honored ; but shrink from the task, and you will be despised.

Sagacity of the Bear.—That wild beasts of all kinds are scared away by fire is a well-known fact ; but the hungry bear is of so cunning a nature that it even sets at defiance the flaming circle which would at other times afford a secure protection to the sleeping traveller. It is true that the bear does not venture to cross the fiery barrier, but it contrives to avoid the difficulty in a most ingenious manner. Going to the nearest stream it immerses itself in the water so as to saturate its fur with moisture, and then returning to the spot where the intended prey lies asleep, the animal rolls over the flaming embers, quenches the glowing brands, and then makes an attack upon the sleeper. This curious fact is well known among the natives of Siberia, so that they have good grounds for the respect in which they hold the bear's intellectual powers.—*Routledge's Illustrated Natural History.*

Sand Pillars.—I have often witnessed a phenomenon on the sandy plains of Central Asia, which accounts in some measure for the innumerable sandy mounds that are found in some regions. When seen at a distance, for the first time, it made a strong impression on my mind. About twenty pillars were in view, wheeling round and licking up the sand. As they passed along, a cloud of dust was raised on the ground, apparently eight or ten yards in diameter. This gradually assumed the form of a column that continued to increase in height and diameter as it moved over the plain, appearing like a mighty serpent rearing its head aloft, and twisting his huge body into contortions in his efforts to ascend. The others fifty, sixty, and one hundred feet, and some ascended to nearly two hundred feet. As the whirlwinds began gathering up the dust, one might have fancied that antediluvian monsters were rising into life and activity. The smaller ones seemed to trip it lightly over the plain, bending their bodies in graceful curves as they passed each other ; while those of larger dimensions revolved with gravity, swelling out their trunks as they moved onward, till the sandy fabric suddenly dissolved, forming a great mound, and creating a cloud of dust that was swept over the desert.—*Atkinson's Travels in the Amoor.*

Putridity in Wells.—Sometimes the water in wells suddenly acquires a putrid taste and smell, as though some animal matter was undergoing decay therein, yet which upon careful ex-

amination is found not to be the case. The Homestead tells of such an instance, and a remedy was found in the thorough agitation of the water, by working a chain pump for two hours, bringing the water more or less in contact with the air. The next day the water was as sweet as ever. In the case of a cistern of filtered rain water, the same remedy of agitation was resorted to with equal success.

The Family.—The family circle is God's blessed ordinance, and is the sweetest, the happiest, and the most hallowed spot on earth. It is the nursery of affection, of friendship, and of virtue; the place where those ties of mutual dependence and help are first formed, which, in their expanded state, unite human society; and according to the manner which the rights of the family circle are enjoyed, its duties discharged, and its true benefits realized, are the moral character, the stability, and the grandeur of a country.

Little Elephants.—The buchas, or little sucking elephents of four or five feet high, are ludicrous little monsters; they become troublesomely familiar after about two days' initiation in the ways of civilized life. A stranger arriving in Howell's camp, and proceeding in all innocency to the corner where the elephants were picketed, would be immediately subject to examination by those inquisitive little brutes—one of them, perhaps, playfully removing his hat, when apparently phrenologically examining his head; while another, with cheerful familiarity, would make him stand on one leg, by winding its trunk round the other. I have known one of them considerably astonish a gentleman by insinuating the point of its trunk into his pocket, and the suddenness and facility with which it unbuttoned his pantaloons.—*Hunting in the Himalaya.*

Alpine Superstition.—In some places the superstitions are still many. The crow and the woodpecker are evil omens; and witches have lost none of their power. *Thor* and *Woden* were evidently the gods of those who once inhabited the land; and remnants of ancient mythology are still to be traced in the credulity of the ignorant. To sit upon a house where one is sick will bring death. Whoever meets a white chamois will die. The blossoming of the nightshade, the striking of the clock when the bells ring, are tokens of evil; but if one has money in his pocket when he first hears the cuckoo sing in the spring, he will have money all the year.—*Cottages of the Alps.*

Large Hogs.—There have been many fine hogs brought into market at Guelph during the present season; and amongst the most successful breeders, are undoubtedly Mr. Thos. Card-sen., and Mr. John Card, of Guelph Township. A week or two ago, Mr. Card, sen., sold an immense hog, weighing nearly 700 lbs, to Mr. George Hood, for $50; and this week, Mr. John Card has sold a splendid animal, 13 months old, to Mr. Budd, of Guelph. The weight of the hog is about 500 lbs.; and the breed, a cross between the Yorkshire and Suffolk. A breeder who can raise animals such as these, to weigh over 500 lbs in 13 months, must have hit upon a good breed as well as the best plan of feeding them.—*Wellington Mercury.*

Artesian Wells.—Professor Newbury, thinks that artesian wells cannot be bored to any advantage in Ohio. The well in the State House yard at Columbus has reached a depth of 2,775 feet [or over half a mile], and yet the water will not rise above the surface; and even if water shall be got, the Professor says it will be warm and salt, and so unfit for use.

Lying in Bed.—It is often a question amongst people who are unacquainted with the anatomy and pysiology of man, whether lying with the head exalted or level with the body was the most wholesome. Most, consulting their own ease on this point, argue in favour of that which they prefer. Now, although many delight in bolstering up their heads at night, and sleep soundly without injury, yet we declare it to be a dangerous habit. The vessels through which the blood passes from the heart to the head are always lessened in their cavities when the head is resting in bed higher than the body: therefore, in all diseases attended with fever, the head should be pretty nearly on a level with the body; and people ought to accustom themselves to sleep thus, and avoid danger.—*Med. Journal.*

Kingfishers.—Kingfishers are greatly susceptible of music, provided that it be played in a slow and solemn strain, like the old ecclesiastical chants. There was an organ in the house placed in a room that looked towards the stream which the kingfishers frequented, and it was observed by the household that whenever music of such a character was played on the organ, the kingfishers would soon make their appearance at the bottom of the garden, and sit as if enchanted with the strains. Quick and lively airs seemed rather to disconcert the birds, a fact which was not discovered until after many experiments, and the consumption of much time.—*Routledge's Illustrated Natural History.*

What Knowledge is most Worth.—In Herbert Spencer's essays on education—a most profound work—we find the following exquisite paragraph on the utility of practical science:—"A grounding in science is of great importance, both because it prepares for all this and because rational knowledge has an immense superiority over empirical knowledge. Moreover, not only is it that scientific culture is requisite for each, that he may understand the *how* and the *why* of

the things and processes with which he is concerned as maker and distributor; but it is often of much moment that he should understand the how and the why of various other things and processes. In this age of joint stock undertakings, nearly every man above the laborer is interested as capitalist in some other occupation than his own ; and, thus interested, his profit or loss often depends on his knowledge of the science bearing on this other occupation. Here is a mine, in the sinking of which many shareholders ruined themselves from not knowing that a certain fossil belonged to the old red sandstone, below which no coal is found. Not many years ago, $30,000 was lost in the prosecution of a scheme for collecting the alcohol that distills from bread in baking : all of which would have been saved to the subscribers had they known that less than a hundredth part by weight of the flour is lost in fermentation. Numerous attempts have been made to construct electro-magnetic engines, in the hope of superseding steam ; but had those who supplied the money understood the general law of the correlation and equivalence of forces, they might have had better balances at their bankers. Daily are men induced to aid in carrying out inventions which a mere tyro in science could show to be futile. Scarcely a locality but has its history of fortunes thrown away over some impossible project."

The celebrated French dramatist, M. Scribe, has just retired from authorship on an income of more than £7,000 a year, the fruit of his literary labors.

A Parisian cook has introduced a new kind of concentrated food. A piece about the size of a visiting card, and as thin, when dissolved in in hot water, yields a capital soup.

The pleuro-pneumonia among the cattle of Massachusetts has cost, for Commissioners, and for cattle slaughtered by their orders, upwards of fifty thousand dollars. The Commissioners, are confident that the malady is eradicated.

A Triumph of Science.—The liquid of the blood is colorless, and its red appearance is due to the presence of innumerable little bodies floating in it, which are so small that three millions of them are contained in a drop which may be suspended on the point of a needle. These corpuscles are sacs filed with a compound substance, and it has been ascertained what both the film of the sac and its contents are composed of. Each one of these little bodies has its own life. They are formed, and grow, and die; and it is calculated that nearly 20 millions perish at every pulsation of the heart.

Ventilation of the Sick Room.—With a proper supply of windows and a proper supply of fuel in open fireplaces, fresh air is comparatively easy to secure when your patient or patients are in bed. Never be afraid of open windows then. People don't catch cold in bed. This is a popular fallacy. With proper bedclothes and hot bottles, if necessary, you can always keep a patient warm in bed, and well ventilate him at the same time. I know an intelligent, humane house-surgeon, who makes a practice of keeping the ward-windows open. The physicians and surgeons invariably close them while going their rounds, and the house-surgeon very properly as invariably opens them whenever the doctors have turned their backs. Do you ever go into the bedrooms of any persons of any class, whether they contain one, two, or twenty people, whether they hold sick or well, at night, or before the windows are opened in the morning, and ever find the air anything but unwholesomely close and foul ? And why should it be so ? And of how much importance it is that it should not be so ! During sleep the human body, even when in health, is far more injured by the influence of foul air than when awake. Why can't you keep the air all night, then, as pure as the air without, in the rooms you sleep ? But, for this, you must have sufficient outlet for the impure air you make yourselves, to go out ; sufficient inlet for the pure air from without to come in. You must have open chimneys, open windows, or ventilators ; no close curtains round your beds ; no shutters or curtains to your windows—none of the contrivances by which you undermine your own health or destroy the chances of recovery of your sick.—*Miss Nightingale.*

To Prevent Rot in Dwelling-houses.—Make two or more openings in the external walls, and put gratings on them to keep out vermin, from below the basement floor. Insert a tile pipe into the fire-wall with one end open to the space below the floor, and carry the pipe up the centre of the fire-wall as close as possible to the fire-flue, and out at the chimney-head. The air in the pipe will be rarefied, being in close contact with the fire-flue, thus causing a continuous upward flow, sweeping the space below the floor of all the foul air, which, in my opinion, is the chief cause of dry rot. The whole of the apartments in the house may be ventilated by means of this pipe, by inserting a tube into it at the level of the ceiling, with a valve in it to prevent down draught. I have adopted this system for the last ten years, because I know of no better.—*Builder, (London.)*

Water in London.—In a careful and elaborate report to the New River Water Company, Professor Spencer, in speaking of the corrosion of iron mains and the effect of gas leakage, states that it is computed that there are 4,000 miles of gas mains laid under the road mains of London, from which 600,000,000 feet of gas are annually absorbed into the earth, the far larger proportion of which could be saved by improved conduits. As a matter of economy, its results would pay a dividend of five per cent on the gross capital of the London companies. It is a

question for photographers how far the extraordinary excess of carbureted hydrogen with its other impurities, contaminating their water at times, may account for exceptional and unexplainable phenomena and puzzling failure.

Miss Nightingale's "Notes on Nursing."—Any one who reads those Notes without being moved in the depths of his heart, will not understand the writer of them by any amount of description; and those who have been so moved, do not need and will not tolerate it. The intense and exquisite humanity to the sick, underlying the glorious common sense about affairs, and the stern insight into the weaknesses and the perversions of the healthy, troubled as they are by the sight of suffering, and sympathising with themselves itstead of the patient, lay open a good deal of the secret of this wonderful woman's life and power. We begin to see how a woman, anything but robust at any time, may have been able, as well as willing, to undertake whatever was most repulsive and most agonising in the care of wounded soldiers, and crowds of cholera patients. We see how her minute economy and attention to the smallest details are reconcilable with the magnitude of her administration, and the comprehensiveness of her plans for hospital establishments, and for the reduction of the national rate of mortality. As the lives of the sick hang on small things, she is as earnest about the quality of a cup of arrowroot, and the opening and shutting of doors, as about the institution of a service between the commissariat and the regimental, which shall ensure an army against being starved when within reach of food. In the mind of a true nurse, nothing is too great or too small to be attended to with all diligence; and therefore we have seen Florence Nightingale doing, and insisting upon, the right about shirts and towels, spoon meats, and the boiling of rice; and largely aiding in reducing the mortality of the army from nineteen in the thousand to eight, in time of peace.—*Once a Week*

"The Dust we Tread Upon was Once Alive!"—A few feet below the level of the crowded pavements of London lies a city of richer ornament and finer architectural tastes than the great metropolis which conceals it. Outside the boundary wall, thirty feet high and twelve in thickness, the wooded south shore of the clear and silvery Thames, sloping upwards towards Camberwell and Herne Hill, was studded with the mansions of the military and civil chiefs. A beautiful landscape must have presented itself to the citizens who wandered up to the court of the sacred fane on Ludgate-hill, for on all sides, the view was unobscured by lofty buildings, and nothing was seen but the porticos and gardens of those rustic retirements and the windings of many little brooks, now degraded into drains and cesspools, which pursued their course through groves and meadows till they were lost in the abounding river. Within the rampart, wherever we make an opening and dig deep enough, between Newgate and the Tower, magnificent tesselated pavements and fragments of marble statues reward our toil. The juxtaposition of mo ern names and associations with those reappearances of a long vanished state of manners, is almost ludicrous—a mosaic picture of Europa on the bull, fresh in colors and perfect in design, beneath the busy multitudes of Bishopsgate-street, and bracelets of noble ladies beneath the gaspipes of Cornhill—though it perhaps has a fitter connection with the site of its discovery when we read of a splendid representation in coloured titles of Bacchus, the conqueror of the East, in front of the India House in Leadenhall-street.—*White's History of England.*

Wisdom for Winter.—Never go to bed with cold or damp feet.

In going into colder air keep the mouth resolutely closed, that by compelling the air to pass circuituously through the nose and head, it may become warmed before it reaches the lungs, and thus prevent those sudden shocks and sudden chills which frequently end in pleurisy, pneumonia and other serious forms of disease.

Never stand still a moment out of doors, especially at street corners, after having walked even a short distance.

Never ride near the open window of a vehicle for a single half minute, especially if it has been preceeded by a walk; valuable lives have thus been lost, or good health permanently destroyed.

Never wear india rubber boots in cold dry weather.

Those who are easily chilled on going out of doors should have some cotton batting attached to the vest or outer garment, so as to protect the space between the shoulder blades behind, the lungs being attached to the body at that point; a little there, is worth five times the amount over the chest in front.

Never begin a journey untill breakfast is eaten.

After speaking, singing or preaching in a warm room in winter, do not leave it for at least ten minutes, and even then close the mouth, put on the gloves, wrap up the neck and put on a cloak or overcoat before passing out of the door; the neglect of these precautions has laid many a good and useful man in a premature grave.

Never speak under a hoarseness, especially if it requires an effort, or gives a hurting or painful feeling, for it often results in a premature loss of voice or a long life of invalidism.—*Hall's Journal of Health.*

Curious Facts in Natural History.—"About thirty years ago the first crow crossed the Genesee River westwardly," so says a writer in the *Democratic Union*, and "that the fox, the hen hawk, swallow, and many other birds and insects seem to follow civilization." Within thirty-six

years the locust-borer made its first appearance in the United States, and as yet has not reached the locust trees of the South and West. It commenced its ravages on the east side of the Genesee River in 1830, and it was seven years before it crossed to the west side. The grain weevil began its course of destruction in 1828, and it progresses in the course it takes from ten to fifteen miles a year. Rose-bugs have been so common in some of the Eastern States, that on their sea shores they have floated in windrows on the sands, having been driven into the sea by winds and drowned. The cedar or cherry birds were first noticed west of the Genesee River in 1828, and they are now so great a pest as to induce many to give up the cultivation of cherries, especially near woodland. The curculio, which is indigenous to America, was first discovered by Mr. Gaul, the first editor of the *Genesee Farmer*, since that time it has disseminated itself over the whole country. The cut-worm appeared in 1816 and 1821, (noticed as the cold years, when the whole northern country approached the brink of famine,) and are now universal.—The Hessian fly was introduced, it is supposed, by the foreign mercenaries in 1777, on Long Island, from their baggage or in the forage for their horses.—*Working Farmer.*

Editorial Notices &c.

The Journal of the Board of Arts and Manufactures of Upper Canada: Nos. 2 and 3.

This Journal, under the able management of Professor Hind, has commenced a career of usefulness which promises to be of long duration. The numbers before us are replete with appropriate and valuable matter, original and selected. The articles on the Rock Oil of Canada;—European emigration to Canada; Canada at the International exhibition of 1862; and others of similar character, treat of matters of great Provincial interest and importance. As the Board is now got fairly into working order, this journal, which will contain official reports of its proceedings, will be perused with pleasure by all who take an interest in the material welfare of the country. The subscription is $1 per annum for single copies; 75 cents to clubs; and to Mechanics' Institutes, and other incorporated societies for the promotion of the industrial arts, only 50 cents, if ordered by their respective Secretaries. This arrangement or readers will precieve includes the members of all our Agricultural Societies organized according to statute; and we trust many will avail themsellves of the advantages thereof.

Communications to the Board or for the journal should be addressed to the Secretary, Wm. Edwards, Esq., Board Rooms, 79 King Street West, Toronto. Their Rooms contain models of Canadian Patents, a fine Library of Reference, Illustrative of the industrial and Decorative Arts and Manufactures, are open to the Public daily from 10 A. M. till noon, and from 1 to 4 o'clock, P. M. The Model room contains about 500 models of Canadian Patented Inventions. Persons from the country will find this an agreeable and instructive visit.

Blackwood's Magazine for March. New York, Leonard Scott & Co.; Toronto, H. Rowsell.

Another capital number of this long established monthly,—which shows no sign of deterioration, but rather the contrary, from age. Its contents are full of interest and instructive to the general reader. What reading man can afford to go without Blackwood, when it can be had in this cheap but well executed Reprint for $3 a year!—or, with the four leading British Quarterlies for $10 per annum! These publications, in so cheap and accessible a form, are conferring upon all who speak the English language on this continent intellectual pleasures and advantages whichit is impossible fullyto estimate.

Exhibitions of Agricultural Societies.

We beg leave to call the attention of the Officers of Agricultural Societies to that clause of the Agriculturul Statute, clause 15, in the Act 20 Vic. cap. 32, and 16 in chapter 32 of the Consolidated Statutes, requiring all Societies receiving any share of the public grant to give one month's notice of the time and place of holding their exhibitions in the Journal published by the Board of Agriculture, or adopted as their channel of communication. The *Agriculturist* is of course the journal occupying that position in Upper Canada, but in very few instances have any of the Societies complied with the law in this respect. We shall always be happy to publish snch information, of course without charge; and if furnished by the societies its appearance in the pages of the *Agriculturist* would furnish a very

useful directory to persons in all parts of the Province who wish to attend any such Shows. Let the officers of Societies merely send us their bills, or a notice of the Show in any other convenient shape, and we will publish the information in a condensed form for easy reference.

ERRATUM.—A Typographical Error occurred in our number of March 1st., in the article on Mowing and Reaping Machines, which we desire to correct. On page 140, 2nd column, 4th line from the bottom, for "Hussey, Hornster," read "Hussey's Harvester, and in the bottom line, instead of "Hornster," read "Harvester."

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March 9, 1861. 6t

THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, APRIL 16, 1861. No. 8.

Farm Operations.

The work of the farm is now commencing in right earnest, and the attention of the cultivator will for some time to come be wholly engrossed with the pressing and multifarious details of his business. The season must be considered late; the frost, however, is out of the ground; the snow has disappeared; recent rains have fallen to consolidate the surface, and there is good ground to hope that agricultural operations will proceed without any serious drawbacks or interruptions. Winter wheat we trust has not been extensively damaged,—in some places, as is always the case, it is looking weakly. Where the surface is loose, and the plant lifted by the frost, the application of the roller, as soon as the ground will admit, will be beneficial, and great care should be taken to drain off any stagnant water; particularly on heavy soils.

Those who ploughed their clay soils in the fall will begin to appreciate the advantages of the operation; the frost having effected a state of pulverization which could not otherwise have been obtained. Sandy soils are not affected in a similar manner, or at least not to anything like the same extent, and may be left to depend on spring working. Never work land, especially the stiffer soils, while it is wet; much better wait a few days, even though the season be late. A productive harvest greatly depends upon getting a well-prepared seed bed, and the selection of *pure seed*. In nothing, perhaps, do farmers more commonly err than in the latter; although of late, there is reason to believe, more attention has been paid to this very important matter. Not only should pure, well-ripened seed be selected, but it is of importance that it should occasionally be obtained from a distance, and from different soils, as it is well known to practical men that such changes are highly beneficial. This remark applies to all kinds of grain, which are certain to deteriorate more or less, by repeatedly sowing the seed raised from the same soil. Oats in particular rapidly degenerate in this climate, and seed should every few years be got from a distance; say from the eastern sections of these Provinces, and the nearer the sea-board the better. The farmer would do well to bear in mind that the adage, "Like produces like." applies to the cultivated cereals as well as to animals.

Where land was deeply ploughed in the fall it may often be brought into excellent tilth for seeding without again ploughing, by using a heavy cultivator as soon as the ground gets sufficiently dry. Land for barley requires a deep and fine tilth; peas should be sown as soon as the soil will admit, also vetches, when intended for feeding green to stock, then follow oats, barley, &c. The sooner spring wheat is soon the better,—always premising, of course, in this as in all other instances that the land is in a suitable condition. Many farmers, however, have sown spring wheat late,—the Fife variety for instance, from the beginning to near the

middle of May, in order to avoid the attacks of the midge, and the results have been generally successful. Some districts last year produced from 25 to 30 bushels per acre. Potatoes in cellars or pits should be carefully examined, if not done before, and the healthiest-looking tubers selected for seed.

Live stock still require attention, and such as have a good supply of turnips and mangels left will now be able to comprehend their value. Mangels, if properly preserved, will continue fresh and palatable to cattle through the greater part of next month, and they are excellent for milch cows. Horses will require richer and more ample food as spring work increases; a few carrots or other roots in connection with an increased supply of oats, will keep them fully up to their work, and greatly promote their health and sleek appearance. On no account, if it can possibly be avoided, should animals be turned on pastures till the grass has fairly started and covered the ground. Meadows or pastures too closely eaten in spring never recover their wonted energy, and will produce but a comparatively small supply of hay or feed, during the rest of the year.

Horse and Cattle Foods.

We have had occasion in previous numbers of this journal to speak of the preparations now so common in Europe for feeding cattle, some of which even have been offered for sale in the larger towns of this province. Various stimulating substances are mixed with ordinary cattle food, and sold at exorbitant prices. They are thus made extremely palatable to the animal, which naturally enough thrives upon the good things provided for him. We will not now stop to inquire how far they themselves may be beneficial, even admitting the temporary advantage; our object is simply to show that it will not pay, and must involve the purchaser in pecuniary loss. For our facts we are indebted to an article on this subject in *The Field*, an ably conducted English paper, devoted to rural matters.

If the price of oil-cake, ranging at about £10 sterling a ton, forms the limit from which any ordinary return can be expected, how can an article, sold at a price realising from 300 to 400 per cent. on the cost price of the materials of which it is composed, ever bring any return at all? Such savoury condiments, dished up at from £40 to £50 a ton, have no more fattening powers than the ordinary cakes and meal, of which, indeed, their bulk is principally composed. Locust beans, the different oil cakes, and Indian corn, form the basis of these cattle foods so often paraded before the public, with which sundry stimulants, making a kind of curry-powder concoction, are mixed up. This, though it may be highly agreeable, yet, at the price above stated, forms a most costly addition to the ordinary outlay for feeding, and an animal once pampered on such material can hardly fall back on ordinary food; hence the price of fattening is greatly enhanced, but without any increase of the saleable carcass, for there is a natural limit in this direction. A compound at £40 a ton will make no more flesh than oil-cake at £10; but if the farmer approves of and will have the compound, let him simply mix the materials himself. There is no secret in the composition, for the test is at hand in a simple analysis. The following is an ordinary formula:—

TO MAKE ONE TON OF MEAL.

	cwt.	qrs.	lbs.	£	s.	d.
Locust bean, finely ground, at £6 a ton,	6	0	0	1	16	0
Indian Corn, at £7 a ton	9	0	0	3	3	0
Best linseed Cake at £10 a ton	3	0	0	1	19	0
Powdered turmeric, at 8d a lb	0	0	40	1	6	8
Sulphur, at 2d a lb	0	0	40	0	6	8
Saltepetre, at 5d a lb	0	0	20	0	8	4
Liquorice, at 1s a lb	0	0	27	1	7	0
Ginger, at 6d a lb	0	0	3	0	1	6
Aniseed, at 9d a lb	0	0	4	0	3	0
Coriander, at 9d a lb	0	0	10	0	7	6
Gentian at 8d a lb	0	0	10	0	6	8
Cream of Tartar at 1s 8d a lb	0	0	2	0	3	4
Corbonate of Soda, at 4d a lb	0	0	6	0	2	0
Levigated Antomony, at 6d a lb	0	0	6	0	3	0
Common Salt, at ½d a lb	0	0	30	0	1	3
Peruvian Bark, at 4s a lb	0	0	4	0	16	0
Fenugreek, at 9d a lb	0	0	22	0	16	6
Total	20	0	0	£13	7	5

Looking at this composition, it will be evident at a glance that the chief ingredients are the ordinary commercial locust bean, Indian corn, and oil cakes. These form its bulk, and constitute nine-tenths of the whole; the remainder being made up of condiments and stimulants, the sulphur and antimony being intended to act upon the skin in the production of a fine coat, and the fenugreek forming a kind of mucilage to prevent any ill effects that might arrive from the stimulating character of the food. These

ingredients have no doubt been selected with skill, and an animal may be expected, and not unreasonably, to thrive on such savoury substances. For this precious article (which it unquestionably is) the modest sum of 42s. a cwt. is demanded, or at the rate of £42 a ton, upwards of 200 per cent. on the cost price; even taken at the valuation given above, which for the one-tenth or stimulating portion might be considerably reduced, if the several materials were bought at wholesale prices. We prefer, however, to take the ordinary trade reduction, in order to give the widest margin possible for the cost—this, after all, being the simple point at issue. If a farmer wishes for the article, the use of which, containing as it does so much stimulating matter, is very questionable, and chooses to pay from three to four times the intrinsic value, it is, of course, at his option to do so; but as the whole question of farming is one of paying, we will put it plainly,—can it pay to feed animals on substances costing from £40 to £50 a ton? A knowledge of the constituent elements of these foods may induce a pause before the outlay is made. Competition, we perceive, has of late sprung up in the manufacture of these cattle foods, and the price has consequently declined. Thorley, the original manufacturer, not only advertises to an extraordinary extent, but publishes a yearly almanac, and a weekly paper, for the express purpose of puffing off his productions.

Trials of Bone Dust Manure.

Editor of Agriculturist.—In 1854 I procured ten bushels of bone dust from Toronto, and applied it to turnips, at the rate of fifteen bushels to the acre, along with about half the quantity of barn-yard manure. The piece was carefully marked, the rest of the field being manured with the usual quantity of barn-yard manure. The turnip crop showed no improvement whatever, but the following crop of wheat showed a marked improvement, and the following barley one still more. The next two crops were clover, and they both showed distinctly where the bone dust came to. After that the land was summer fallowed, but the difference in the last crop was not so marked.

In 1858 I procured four bushels of bone dust and tried it on turnips again. They showed a marked difference this time at the start, but unfortunately when they were nearly meeting in the drills the grasshoppers came and stripped them completely, but the bone dust showed its beneficial effect on the two following crops.

Cobourg, 1861. R.

[With respect to the action of bones, much will depend on the character of the season, and the degree of fineness to which they are reduced. Half inch bones will occupy a long time in dissolving, as they decompose but slowly. For turnips, and where immediate action is required they should be procured in the finest possible state, and if treated with sulphuric acid, forming what is called a super-phosphate of lime, their action will be much expedited. Mr. Lamb, of this city, keeps bones for sale, reduced to different degrees of fineness, and we have heard of many instances in which farmers supplied by him have experienced results quite as satisfactory as those above detailed. Our correspondent, who is a good practical and observant farmer, sends us the following information on this subject from a late number of the *Mark Lane Express*. We shall be happy to hear from those parties to whom bone dust was supplied from Mr. Lamb's establishment under the superintendance of the Board of Agriculture two years ago, stating the result of their experience. —Ed.]

BONE MANURE.

This is universally considered one of the best kinds of manure that can be applied to the land, whether for corn, grass, or root crops, and its extensive and increasing use is a proof of the estimation in which it is held. Not only are the bones of those animals slaughtered in this country employed as manure, but nearly 80,000 tons per annum are imported from foreign countries, chiefly for the same purpose, and yet the supply is by no means equal to the demand. Had not the importation of guano commenced about the year 1840, it is probable that bones would have risen to £10 or £12 per ton.

"That bones must be beneficial as manure," says Mr. Nesbit, in his pamphlet on Agricultural Chemistry, "will appear from a very simple consideration. Animals are fed upon vegetables, and the whole of their bodily structure grows out of the food, or is eliminated and formed from it. If the food did not contain phosphate of lime, the bony structure of the body could not be built up. If the soil in which vegetables grow did not contain phosphate of lime, the seeds of vegetables could not be matured.—Supposing the arable land of this country to have been robbed for a thousand years of phos-

phate of lime, and never to have received any back again; assuming this ingredient to have been continually exported in the shape of milk, cheese, sheep, and oxen, it is clear that unless the land had an unlimited amount of phosphate, which we know is not the case, there must have been a proportionate diminution in the quantity of such materials. Hence it is that when certain substances which had been taken out for a long period have been again suddenly applied, land worth hardly 5s. per acre has sprung up to the value of 15s., and there has been an enormous increase of crops."

One of the most valuable qualities of bones is the slowness with which they decompose, and the length of time during which they continue to give out the phosphates. It is found upon analysis that one pound of bones contains as much phosphoric acid as 28 pounds of wheat or of 250 pounds of potatoes. Now, a crop of wheat of four quarters per acre, and reckoning it at 60lbs. per bushel, weighs in round numbers, 2,000lbs., which contains only as much phosphate as is found in 71lbs. of bones. It is clear, therefore that if the bones are put on at the rate of 3½ cwt. per acre, supposing them to decompose rapidly and give out the phosphates in proportion, a large proportion would be wasted. But that this is not the case the following circumstances prove. A gentleman, who occupied a large farm in Norfolk, finding, towards the close of his wheat sowing, that he was likely to have a considerable quantity of bone dust left, if he continued distributing it at the ordinary rate, directed his foreman to increase the quantity. On going to the field the following day he found that the man had *doubled* the allowance, and that instead of having any to spare, he would not at that rate, have enough to finish manuring the remaining seeding land. He therefore told him to go back to the usual quantity of about 4 cwt. per acre, at which rate the field was finished. The crop of wheat proved a very heavy one, as well as the succeeding crop of turnips, on that part of the land which was thus doubly dosed with bone dust. Now mark what follows. *Eleven years after*, the farmer on riding with a friend over his land, came to this field, which was again, for the third time after the above occurrence, under wheat. On entering it, he requested his friend, if he should, in riding down the furrow, find any difference in the growth of the wheat, to point it out. After riding a few yards into the wheat he suddenly stopped. "What in all the world have you been after here?" he exclaimed. "This wheat is six inches higher, and as stout again as the rest; how came this to pass? The farmer then explained to him the occurrence we have related and which proves not only the value of bones as a manure for a single crop, but that by the deliberate manner in which they give out the phosphates in decomposition, they possess a more permanent value than any other kind of manure.

But bones are not only valuable on account of the phosphoric acid they contain: they also contain nitrogen in the proportion, according to some chemists, of six, and of others of four per cent. As the bones decompose this becomes ammonia, the value of which in manure is now well understood by almost all agriculturists. The conversion of bones into superphosphate of lime by the addition of sulphuric acid, by precipitating the decomposition, probably alters the conditions, by causing the immediate distribution of the phosphoric acid in the sod; and thence it requires a less quantity to be applied to the land to produce a crop. The Americans have adopted a new method of dissolving bones, which may probably be employed to advantage in this country, as the bones will not require to be ground. A ley is made with lime, in the proportion of one bushel of lime to six gallons of water. To two hundred pounds of bones put sixty gallons of this ley, and boil them for a few hours until the bones are dissolved, when they may be reduced to a dry powder, and applied in the same way as guano or any other artificial manure. This mode of application has been found to produce very satisfactory results. The lime used was made of oyster shells, as the best for the purpose. "It has been repeatedly demonstrated," says an American writer, "that one bushel of dissolved bones, *for immediate effect*, is equal to five times as much ground bones; in other words that one pound of *nascent* or soluble phosphate of lime, is worth more than five pounds of *normal*, or natural phosphate of lime, or bone-earth." This economic application of bones is becoming more and more common, being cheaper, and involving less labour, and the result is quite as certain and as good. The only difficulty in the purchase of bones, in whatever form, is that of getting them genuine, on account of the adulteration with *scutch*, or the refuse of the tanpits, oyster-shells, and other cheap ingredients, the proportion of which in bones is regulated, with some dealers, by the price paid per ton. We have known as much as 50 per cent. of scutch mixed with bones as agreed on between the merchant and his customer, a country bone crusher.

The Cultivation of Tares.

For the Agriculturist.—In the *Agriculturist* for March 16th, there is an article on the culture of vetches, or tares, (for the terms are synonymous) in which you say you shall be happy to hear from such of your readers as have had practical experience with them. We have been in the habit of growing them on a small scale for many years, and may say that we look upon them as a green or fallow crop, and sow them in the same field with our root and green crops.

In preparing land for tares, we think the best

method is to manure the ground in the fall, and plough it carefully down; then, as soon as the ground is in a fit state to work, we go over it with a cultivator, making a fine, mellow seed bed, and then sow the tares at the rate of about two bushels per acre. Where the crop is sown for soiling alone it is well to sow about half a bushel of oats mixed with the tares; the oats will, in a measure, prevent the tares from lodging, and will consequently keep them from dust, and other impurities; as, when the season is damp, the tares are apt to lie down and mildew. In that case, stock do not eat them so well. A top-dressing of plaster, when the plants begin to make their appearance above ground, will promote an early growth. If any of the tares are intended to ripen for seed, the plaster had better be omitted, as on such soils they grow too much to straw (if plastered) for ripening their seed well.

If wanted in large quantities for soiling, they should be sown at intervals of from ten days to a fortnight, so that they may be fed to stock when they are in their greatest perfection,—that is, from the time the blossoms begin to appear till the seed is fully formed.

The principal purpose we grow them for is to feed to working horses at noon during the working season of summer-fallowing, or while working them in mowing and reaping machines, drawing grain, or other kind of work during the busy season, when they have not time to fill themselves on our usually short summer pastures; we have no doubt that farmers generally would find it to their advantage to grow a small quantity every year, for such purposes. Tares seem to grow as well here as in Great Britain; the principal difference that we see is, that here, in most cases, they will cut only once, there they will cut twice; should the season be a wet one here they may cut a second time, but rarely. To show how much they are esteemed as a feeding crop we make the following extract from Morton's Cyclopœdia of Arigculture:—"Sheep fatten faster upon green vetches, than on any other herbage, which occasions its constant use by ram-breeders. Horses improve more rapidly upon it than on clover or grasses. Horned cattle thrive surprisingly upon this fodder. Cows yield more butter from the tare than any other provender; and pigs voraciously consume and prosper on it without farinaceous food." Another writer states: "that an acre of good vetches, fed in the yard or stables will keep more horses than six acres of the best pasturage; they succeed best in a wet season. A good smothering crop of vetches, cut before they go to seed is nearly as good to precede a wheat crop as a summer fallow." Mr. Lawe's experiments on tares extending over many years, prove that, like peas and beans and clover, vetches are an improving, rather than an impoverishing crop. To show the extent to which they are grown, we may state that there were estimated in England in 1854, to be 218,551 acres in tares. In Scotland in 1857 the returns gave 18,418 acres in tares, and in Ireland, in 1859, the returns gave 33,207 acres in vetches and rape, as they are combined in the returns from Ireland. We have no idea of the quantity grown in Canada, as there is no notice of them in the census at present being taken.

It is prudent to raise sufficient seed for another year; but a crop of seed tares raised for sale is seldom very profitable, as some years, when they are a good crop for feed, they produce very little seed, being very uncertain in that respect; then the price varies much, and there is seldom much demand for them in Canada. When grown in Britain, expressly for seed, they are frequently mixed with horse beans,—to afford them support for climbing; the proportion the beans should bear to the tares is as one to four by measure, the tares grown by this method are said to ripen better and make a finer sample of seed. We have tried this method once here, and they ripened a week earlier than those that were sown without the bean. Tares thrive best on heavy soil, but will grow on any land if well manured. W. R.

Cobourg, April, 1861.

Cultivators.

Editors of the Agriculturist.—In the last No. of the *Agriculturist*, 16th March, I see over the signature of "Caledon," an enquiry for a two-horse cultivator, simple in construction, that a blacksmith could mend in case of accident, and at such a price that a person having a hundred acre farm could afford to buy. As to the two first points, I am quite sure I could suit your correspondent, but in the latter, he could best judge after a trial of one of my cultivators. I will endeavor to give you and your readers a short description of the cultivators I manufacture: in the first place, the iron is all wrought,—the teeth or blades are laid with steel, and can, when required, be sharpened, or the steel renewed by any good blacksmith. They can be set to cultivate from one to ten inches deep, and are intended to be used with the hind wheels of a common lumber or spring wagon or cart, horse-rake wheels, or wheels furnished with it if ordered. Two horses can work it from three to six inches deep in spring on ground that has been fall-plowed, (or on stubble ground,) about as easy as they can plow the same ground. The teeth or blades being long, they are not liable to clog with the stubble or long manure. By a lever across the axle, with the front end attached to the cultivator, by a short chain, the driver can, without stopping the team, raise the cultivator to clear the ground 8 or ten inches, so that any sods or other obstruction that might hang to the

teeth would drop off. By raising it and fastening it up by the two set bars or keys, (which is quicker done than I can write it) and placing two short boards on the cultivator four or five bags of seeds can be carried on it with the convenience of a cart or wagon. Yours, &c.,

Gananoque, April 1861. HENRY COLLARD.

[The above information would be more complete if our correspondent had given the price of the implement.—ED.]

Best Fertilizers for Indian Corn.

The first thing necessary to secure a good corn crop, is to select suitable lands for planting. Corn requires a rich, warm and well drained soil—such as the alluvial or river flats; next to these are the sandy or gravelly loam, or when the season is favorable, a tenacious loam, muck or clay soil, will, if properly managed, produce fine crops.

My experience is, that extra culture nowhere pays better than in the corn crop; and from a series of experiments I am led to the conclusion that, on a loam or clay soil, there is no better fertilizer within the reach of farmers, generally, than *long, unfermented barn yard manure.*

From long experience I would recommend the following, as the most likely means of securing a good crop:

1st. Select lands naturally or artificially well drained; if a sod, break it up as soon after harvest as circumstances will permit, and as deep as your team are able. Then let it lie, until near the season of planting; harrow thoroughly, and commence drawing the long, unfermented manure from the barn yard; covering one land first—putting on as much as can be turned under by a careful plowman. Then set a team to plowing—mixing the mellow soil and manure well together. If you have, or can conveniently hire them, set teams enough to drawing manure to keep one plowing; thus covering and mixing it with the soil, before much of its fertilizing properties escape and go into the atmosphere by evaporation. Thus most of the gases which escape, when manure is exposed to the heat of the sun, will be mixed with the soil, which will also be warmed by the fermentation of the manure while decomposing—all of which will aid in starting the young corn plant.

After the ground is plowed, then drag it thoroughly, and mark it in rows, north and south, three feet apart, for our northern varieties of corn, as nearly straight, or in line, as possible, and it will be ready for planting. Be careful in selecting good seed, which may be soaked twelve hours, in a solution of saltpetre, by dissolving one pound for each acre, adding warm water enough to cover the seed. My cumst has been to soak only as much over night as would be planted the next day. This I have found to be the cheapest and best article I have tried for starting corn.

We are now prepared for planting, which should be done by careful men, and not by boys; the rows being but three feet distant, and calculated to be worked but one way, the corn should be dropped in hills as near eighteen inches apart as practicable, without the trouble of marking; drop not less than three nor more than four grains in a hill; cover one inch deep, with loose earth.

As soon as the corn is up, put about a large spoonful of plaster, upon each hill, and soon as the rows can be followed, go through it with a cultivator, or horse hoe—mellowing the earth as near the hill as practicable, leaving the surface level; let hands follow with the hoe, and stir the earth about the hill; as soon as thus hoed, plaster again as before directed; and as soon as the grass or weeds start go through again with the horse hoe—throwing the earth up to the hills, and set hands to straighten up the corn, and the labor is completed, until the corn is glazed, when it should be cut up, setting from sixteen to twenty hills together, and binding firmly at the top. When thus tilled, if the season is favorable, the husking will show that you will have about 200 bushels ears of corn, per acre. I have raised on an acre, by this culture, 227½ bushels of ears. The land and corn measured by competent and disinterested persons. The land upon which this crop was raised was a loam and had never been manured, until the season this crop was raised.

My practice now is, to use all of the barn yard manure, each spring, upon corn; then follow with oats, barley or spring wheat, and with one plowing; sow early in September, with Mediterranean wheat, and apply five bushels of plaster per acre, as a top dressing before the wheat is up. A field of ten acres, thus farmed, yielded a large crop of corn, which was injured by frost, and not measured. The oat crop averaged over forty bushels per acre; the wheat over twenty one per acre; and last haying, we cut over two tons of hay to the acre, without any other seeding than from the manure, and without any other manure than for the corn crop, and plaster for the wheat. A. J. W.—*Journal N. Y. State Ag., Society.*

CHEMUNG, February 1861.

Imports and Exports of Agricultural Products.

EDITOR OF THE AGRICULTURIST.—Permit me to call your attention to the Trade and Navigation Returns for 1860, published in the *Leader* of the 11th inst.

These Returns contain information most valuable to our farmers, and which, by a slight re-arrangement of the tables, might be laid before them in a manner to strike the most careless

and to direct the efforts of those anxious for information to guide them in their efforts at improvement.

The Returns show the Imports and Exports of all agricultural produce, but have no table of the net export—so as to show at a glance the real surplus exported annually from the Province, the proceeds of which are the profits of the farming community.

Such a table might be constructed from the Returns, and show both the quantity and value of every article imported and exported under the heading in the Returns of "Animals and their Products," and "Agricultural Products," as well as the total import and export of each. If made from the commencement of the Reciprocity Treaty with the United States it would show the working of that Treaty, and its real importance to the farmers and traders in agricultural produce in the Province.

As an instance of the valuable and curious information to be elicited from such a table I could instance the value of cattle exported in 1859 and 1860—in 1859 it was $925.477, and in 1860, $626.897, a diminution of $298.576, or about one third, while the value of the export of Horses has increased $179.884, of Swine, $112.101, and of Sheep $48.840. A yet more important result would be shown in the value of wheat, flour, and bran exported for the following years:—

1854—value	$ 6,742,200	price	per B.	$1.31.
1855	"	11,750,020	"	"	1.85.
1856	"	10,476,327	"	"	1.39.
1857	"	3,690,428	"	"	1.06.
1858	"	2,763,509	"	"	0.97.
1859	"	1,097,742	"	"	1.06.
1860	"	6,367,061	"	"	1.13.

I might suggest the propriety of such a table being in the future added to the usual Trade and Navigation Returns for the Province.

HEADINGS OF THE PROPSED TABLES.

1. Total Imports—quantity	or	No.	value.
2. Total Exports,	"	"	"
3. Excess of Imports,	"	"	"
4. Excess of Exports,	"	"	"
5. Net Imports,	"	"	"
6. Net Exports,	"	"	"

The imports must be taken from the "free list" and ought to be arranged in a manner to correspond with the form of the export tables of Animals and their Products, and Agricultural Products in the return of export. Their form answers very well to show the trade—but not for seeing at a glance both the import and export of any article included in the Reciprocity Treaty.

Allow me to request a place in your Journal for this letter as well as your exertions, in some manner or other to get up a set of the tables indicated.

I have no doubt that their value would be fully appreciated. Your most obedt. Servt.,

Dunville, April 19th, 1861. JOHN JARROW.

Saving Manure.

EDITOR OF AGRICULTURIST.—In the last *Agriculturist*, Mr. James Courtenay asks three questions, the second, "Which is the best method of saving manure—in barn yards fitted with tanks—or in manure cellars?" And you, Mr. Editor, have given a very good answer, and you wind up by saying that you would be glad to hear from any of your readers who have had experience in the matter. I will give you my plan, which you may publish if you like it.

I have a covered shed, 60 feet long and 16 wide, and into this I cart the droppings from my stables every day, for I keep all my cattle and horses tied up, and the stables cleaned twice daily. The manure shed is closed up on the north side and east end, and thereby the snow is nearly all kept out, and the manure does not freeze, and therefore decomposition goes on all the time. During the month of March I turn the heap, beginning at one end, and finishing at the other. Therefore, by this means the whole of my winter manure is ripe for use as soon as I am ready to use it. I have had no fire fang and no waste. Whatever liquid flows from the heap, I take care to have thrown back again over it, and thus all is saved. Yours, &c.,

R. L. DENISON.

Dovercourt, April 9th, 1861.

Wheat and other Grain in Drills.

MESSRS. EDITORS AGRICULTURIST.—Will you or some of your readers tell me how grain should be sown in drills—and how wide should the drills be apart? 2nd. How wide should the kernels be apart in the drill? 3rd. How deep should the seed be put in the ground. And what difference should there be in the breadth of the drills, and number of kernels, say, to the foot in the drill, between wheat, oats, barley, and peas? By answering these few questions you will oblige, Yours, &c.,

April, 1861. A FARMER.

[Grain Dril's are usually made to deposit the seed in drills ten inches apart; sometimes more or less; some drills admit of adjustment to sow wider or less distances; but generally ten inches is considered on advantageous width. The distance apart of the kernels in the drills will of

course depend on the quantity sown to the acre, and the size or plumpness of the grain. A bushel of wheat is estimated to contain from 700,000 to 800,000 grains. An acre of land contains 52,272 feet in length of drills at ten inches apart. This at the rate of a bushel of wheat to the acre would give an average of about 15 grains to the foot in the drill, and other quantities and kinds in porportion. From three to four inches would be a suitable depth to deposit any of the seeds above mentioned.—Eds.]

Take Care of your Cattle and your Meadows.

Editor of Agriculturist.—Allow me, through your excellent paper, to say a word or two to my brother farmers.

At this season of the year, when the grass is young and tender, do not yield to the temptation to let your sheep and cattle go on your medows and fields while you are giving them hay and other dry food; all they can get for some time to come will only scour and weaken them, as well as cause them to dislike and spoil their good food.

Besides this, they will seriously injure the soil by trampling on it while wet. Moreover, they will bite out the very heart of the young plant, and thereby not only keep back its growth; but materially lessen the quantity of the future crop. A word to the wise is sufficient. S. King.

Ryckman's Cornors, April 8th, 1861.

The Agricultural Statute.

The following are the amendments adopted by the Board of Agriculture of Upper Canada, at their meeting in Toronto on the 13th and 14th ult., to the "Act respecting the Bureau of Agriculture and Agricultural Societies," 22 Vict. cap. 32, Consolidated Statutes, to be submitted to the Legislature for incorporation in the law.

The several sections mentioned to be amended as subjoined. In order to show distinctly the alterations proposed to be made, the words inserted or changed from the present reading of the Act are here printed in Italics:—

XIII. It shall not be lawful for either of the said Boards to pay or allow any sum to a Member thereof, for acting as such Member, except the amount of his actual necessary expenses in attending the regular meetings of the Board; but each of the said Boards may appoint a Secretary from among themselves or otherwise and may pay him a reasonale salary for his services, *and the Treasurer of the Agricultural Association shall be ex-officio Treasurer of the Board of Agriculture.*

XV. It shall be the duty of the Boards respectively:

1. To receive the Reports of Agricultural Societies, and before granting the certificates hereinafter mentioned, to see that they have complied with the law;

2. To take measures, with the approbation of the Minister of Agriculture, to procure and set in operation a model, illustrative or experimental farm or farms in their respective sections of the province, and in connexion with any public school, college, or university, or otherwise, and to manage and conduct the same;

3. To collect and establish, at Toronto and Montreal respectively, an Agricultural Museum and an Agricultural and Horticultural Library, *and to promote the knowledge and practice of the Veterinary Art;*

4. To take measures to obtain from other countries animals of new or improved breeds, new varieties of grain, seeds, vegetables or other agricultural productions, new or improved implements of husbandry or new machines which may appear adapted to facilitate agricultural operations, and to test the quality, value, and usefulness of such animals, grain, seeds, vegetables or other productions, implements or machines,

5. And generally to adopt every means in their power to promote improvement in the agriculture of this Province.

XVII. The said Boards shall transmit to the Bureau of Agriculture a copy of their resolutions, By-laws or other formal proceedings, immediately after the adoption thereof, *and at the commencement of each year a detailed statement of receipts and disbursements made up to the 31st December of the previous year;*

2. And every resolution, By-law, or other proceeding of the said Boards respectively which may involve an expenditure of money to an amount exceeding ten pounds, shall not be passed except with the assent of a majority of the members thereof.

XXXIV. The members of the Boards of Agriculture and of the Boards of Arts and Manufactures, the Presidents and Vice-Presidents of all lawfully organized County Agricultural Societies, and of all Horticultural Societies, *Incorporated Mechanics' Institutes and Arts Associations,* and all subscribers of Five Shillings annually, shall, in their respective sections of the Province, be and constitute an Agricultural Association for that section.

XXXV. The Members of the Board of Agriculture and *the Council* of the Board of Arts

and Manufactures, and the Presidents and Vice Presidents of County Societies, and of all Horticultural Societies, *Mechanics' Institutes and Arts Associations*, (or any two members whom a County or Horticultural Society, *Mechanic's Institute or Arts Association*, may *appoint* instead of its President and Vice-President,) shall be the Directors of such Agricultural Association; and it shall be lawful for the Agricultural Association to elect a Treasurer, *and pay him a reasonable salary.*

XXXVI. The said Associations *may* each hold an Annual *or biennial* Fair or Exhibition, which shall be opened to competitors from any part of the Province, and the said Directors shall hold a meeting during the week of the Exhibition, and may at such meeting elect a President and Vice-Presidents, and appoint the place for holding the next meeting and Exhibition of the Association, and may make rules and regulations for the management of such Exhibition, and may appoint a local Committee at the place where such exhibition is appointed to be held, and prescribe the powers and duties of the said Committee.

XXXVII. The Board of Agriculture, with whom shall for this purpose be associated the President and Vice-President of the Board of Arts and Manufactures, or any two persons from time to time named by the said Board in place of such President and Vice-President, *and one other member of the Council of said Board, to be elected annually by said Council*, shall be the Council of the Association, with full power to act for and on behalf of the Association between the annual meetings thereof; and all grants of money, subscriptions, or other funds made or appropriated to or for the use of the Association, (except money collected by or granted to any local Committee for the local expenses of an Exhibition) shall be received by and expended under the direction of the said Council, and the *President of the Board of Agriculture, and President of the Board of Arts and Manufactures shall be respectively ex-officio President and Vice-President of said Council, and the* Secretary of the Board, together with the Secretary of the Board of Arts and Manufactures, shall be 'ex-officio' joint Secretaries of the Association.

XXXVIII. All contracts and all legal proceedings by, with, or concerning the Association, shall be made and had with the *Council of the Association*, in its Corporate capacity, and no other contracts, agreements, actions or proceedings shall bind or affect the Association.

XLVIII. The said Societies shall hold their annual Meetings *on the third Thursday* in the month of January, in each year, and shall at such Meeting, elect a President, two Vice-Presidents, a Secretary and Treasurer, and not more than seven Directors.

XLIX. The Presidents of the several Township Agricultural Societies, and also the Presidents of *Incorporated* Mechanics' Institutes receiving Government aid, and of Boards of Trade, (or any other person appointed by such Society, Institute or Board, in the place of such President,) within the County shall in addition to those before named, be 'ex officio' Directors of the County Society: Provided that each such Township Society and Mechanics' Institute shall have *upon its list of members at least ten persons who are also members of the County Society, and paying not less than one dollar each, or that such Society or Mechanics' Institute shall otherwise have* contributed ten dollars annually to the funds of the County Society; and the said Officers and Directors shall and may for the year next following the annual Meeting, and until the election of their successors, exercise all the powers vested in the County Society by this Act.

LI. The said Officers and Directors shall, in addition to the ordinary duties of management, cause to be prepared, and shall present at the Annual Meeting, a Report of their proceedings during the year, in which shall be stated the names of all the Members of the Society, the amount paid by each set opposite his name, the names of all persons to whom premiums were awarded, the amount of such Premiums respectively, and the name of the Animal, Article or thing in respect of which the same was granted, together with such remarks and suggestions upon the Agriculture and Horticulture of the County, and Arts and Manufactures therein, as the Directors shall be enabled to offer; there shall also be presented to the said Annual Meeting, a detailed statement of the receipts and disbursements of the Society during the year, which Report and Statement, if approved by the meeting, shall be entered in the Society's Journal, to be kept for such purposes, and signed by the President or a Vice-President as being a correct entry; and a true copy thereof certified by the President or Secretary for the time being, shall be sent to the Board of Agriculture, on or before the first day of *March* following.

LV. The said Societies shall hold their Annual Meeting *on the second Thursday* of the month of January in each year, and shall elect a President, Vice-President, Secretary and Treasurer, and not fewer than three or more than nine Directors.

LVI. The said Officers and Directors shall prepare and present to the Annual Meeting of the Society, a Report of the Society during the year, in the same manner as hereinbefore directed for County Societies, and containing information under the same heads; and shall transmit a true copy thereof, certified by the President or Vice-President, to the Secretary of the County Society, in time for the Annual Meeting thereof *on the third Thursday of January.*

LVIII. Whenever the President and Secretary of the Board of Agriculture shall certify to the Minister of Agriculture that any County Society has sent to the Board Reports and Statements as required by this Act, for the year then last previous, and shall also certify that the Treasurer or other Officers of the said Society has *on or before the first day of July of the then current year*, transmitted to the said Board an Affidavit, which may be in the form of Schedule B to this Act annexed, and may be sworn to before any Justice of the Peace, who is hereby authorized to receive the same, stating the amount subscribed for that year and paid to the Treasurer of the County Society by the Members thereof, and by the several Township Societies of the said County, it shall be lawful for the Governor of this Province to issue his Warrant in favor of such County Society for a sum—&c., as in Act.

LIX. The following Electoral Divisions, namely:—the city of Toronto, the city of Kingston,—the city of Hamilton,—the Town of Brockville,—the town of Niagara,—the town of Cornwall,—the city of London,—and the city of Ottowa, as bounded for purposes of representation in the Legislative Assembly,—shall each be entitled to receive a sum not exceeding four hundred dollars for the encouragement of Horticulture, Agriculture, Manufactures and works of Art within their respective limits:

2. Provided that *a sum equal to not less than one third of* the sum to be so paid by the Government, be subscribed and paid to the Treasurer of a Society to be formed within such Electoral Division, in the same manner as County Agricultural Societies under section forty-five of this act, to be called "The Society for the Upper Canada Electoral Division of———," or as the case may be.

LX. Every Township or Branch Society organized according to the Act hereby repealed or to this Act, and sending a report of its proceedings to the County Society, as hereinbefore required, shall be entitled to a share of the grant to the County Society, in proportion to the amount which shall have been subscribed by the Members of such Township or Branch Society, and deposited with the Treasurer of the County Society, on or before the first day of May, in each year, as compared with the amounts so deposited by the other Township and Branch Societies of the County; and the sum so deposited by any Township or Branch Society shall be repaid, along with its share of the Public Grant, so soon as the said grant shall have been received by the County Society:

2. Provided that *one half* and no more of the sum so received by any County Society shall be subject to division among Township or Branch Societies—&c., as in Act.

The Influence of a first Impregnation.

In our issue of Jan. 5th in an article "A curious theory in the physiology of breeding" we hinted a possible, indeed a probable solution of the "cause of many of the disappointments of which practical breeders complain."

A writer in the *Southern Rural Gentleman* says:

"It has been asserted by some observers, that when a female breeds successively from several different males, the offspring often bears a strong resemblance to the first male, which is supposed to arise from certain impressions made on the imagination or nervous system of the female. Althogh this is sometimes or often the case, we doubt very much whether it is so frequent as to be considered as a rule.

Secretary Goodale's Report for 1860 says, "There can be no doubt such an impression *is* made, and demands the special attention of all breeders." With the most celebrated breeders of England it is fast becoming a settled opinion that the 'male first having fruitful intercourse with the female, exerts an influence upon her subsequent offspring by *other* males,' that it is not the result of chance or accident, but a fixed principle in the laws of re-production.

Such a strange and mysterious theory—one of great importance—is borne out by a great number of facts. A few of which we quote from Goodale's last Report.

In several foals in the royal stud at Hampton Court, got by the horse "Actæon," there were unmistakable marks of the horse "Colonel." The dams of these foals were bred from by Colonel the previous years.

Alexander Morrison, Esq., of Bognie, had a fine Clydesdale mare which in 1843 was served by a Spanish ass and produced a mule. She afterwards had a colt by a horse, which bore a very marked likeness to a mule—seen at a distance, every one sets it down at once as a mule. The ears are nine and one half inches long.

It appeais to have been known among the Arabs for centuries, that a mare which has first borne a mule, is ever after unfit to breed pure horses.

A pure Aberdeenshire heifer, the property of a farmer in Forgue, was served with a pure Teeswater bull to which she had a first cross calf. The following season the same cow was served with a pure Aberdeenshire bull, the produce was in appearance a cross-bred calf which at two years old had long horns; the parents were both hornless.

Six very superior pure-bred black faced horned ewes, belonging to Mr. H. Shaw of Leochel-Cushnie, were served by a Leicester ram, (white faced and hornless.) The lambs were crosses. The next year they were served by a ram of exactly the same breed as the ewes themselves. To Mr. Shaw's astonishment the lambs were without an exception hornless and brownish in

face, instead of being black and horned. The third year (1846) they were again served by a superior ram of their own breed, and again the lambs were mongrels.

A sow of the black and white breed became pregnant by a boar of the wild breed of a deep chestnut color. The pigs produced were duly mixed, the color of the boar being in some very predominant. The sow being afterwards put to a boar of the same breed as herself, some of the produce was still stained or marked with a chestnut color which prevailed in the first litter and the same occurred after a third impregnation, the boar being then of the same kind as herself. What adds to the force of this case is that in the course of many years' observation the breed in question was never known to produce progeny having the slightest tinge of chestnut color.

A young woman residing in Edinburgh, and born of white parents, but whose mother previous to her marriage bore a mulatto child by a negro man servant, exhibits distinct traces of the negro.

It is by no means an infrequent occurrence for a widow who has married again to bear children resembling her first husband.

A very striking fact may be related in this connection, which while it may or may not have a practical bearing on the breeding of domestic animals, shows forcibly how mysterious are some of the laws of reproduction. It is stated by the celebrated traveler, Court de Strzelecki, in his Physical Description of New South Wales and Van Dieman's Land. "Whenever,' he says, "a fruitful intercouse has taken place between an aboriginal woman and an European male, that aboriginal woman is forever after incapable of being impregnated by a male of her own nation, althogh she may again be fertile with a European."

A reliable farmer related to us a remarkable instance within his own observation in proof of the influence of a first impregnation, we repeat his language, "For many years my father was possessed of a breed of cattle which he called the *belly stripe*— the cattle were black with the exception of a stripe of white around her body.— When the first Durham bull was introduced into our town one of the belly stripe cows was put to him, with the expectation of obtaining a calf resembling the bull, but to our great disappointment the calf, a heifer, was a *belly stripe.*

I raised the calf—when two years old she was served by a Durham bull and produced a calf having the likeness of the bull. She was afterwards served by a belly stripe bull *but the calf was a Durham.*"

Such instances as those already given which might be multiplied to an indefinite number cannot be the result of impracticable vagaries or of whimsical imagination—but are of so marked a character as to deserve and demand a candid and thorough investigation.—*Eastern Farmer (Maine.)*

Agriculture: Its Past, Present, and Future.

(*Continued from page* 202.)

What Modern Agricultural Progress owes to Manufactures.—Let us ask how it is that within the last seventy years agriculture has made such enormous strides as compared with its former history? The answer is ready and simple. We have become the workshop of the world; nearly nine-tenths of our population are engaged in, or dependent upon, manufactures, commerce, trade, and other occupations, non-agricultural; whilst this once purely agricultural people represent now only one-tenth of the national population. Agriculture owes nearly its all to the spinning-jenny, the power-loom, the mule, and the thousands of new inventions and new occupations of modern times. Mighty steam pours into the national lap the estimated labours of a supposed population equal to that of the whole world. The well-to-do and multiplied millions—under ground, above ground, on the broad waters, and on the busy rail, make greedy and unsatisfied demands on the British farmer, who, shame to say, helpless and powerless, is unable, because unwilling, to respond to the call. Like a negligent shopkeeper, he compels best customers to deal with and strengthen his competitors' hands over the water. Is there one agriculturist who can still harbor in his mind a lurking belief that his own interest is opposed to that of trade, commerce, and manufactures? If so, let him sweep away, in his imagination, the towns, and cities, and factories, the iron and coal mines, the railways, and mercantile fleets; and let him fancy himself, like the ancient Briton, a producer with no other customer than himself, his lord, his warriors, and his governors.

There was a time when Agriculture cast a jealous and disapproving eye on Manufacturers, but I trust intelligence has removed it. It is precisely because the British farmers have their customers—the British manufacturers—almost at their doors, and that other corn-producing countries have *not* any manufacturers, that British agriculture is more rich and thriving. The larger the population employed in manufacturing for foreigners, the better for the English farmer and the English landlord; for no doubt the latter will always participate largely in the farmers' well-doing. Farmers and country gentlemen sometimes look with an unkindly eye on apron-string farmers or cotton lords; but this should not be.

How the Commerce of Towns contributed to the Improvement of the Country.—"The increase and riches of commercial and manufac-

turing towns contributed to the improvement and cultivation of countries to which they belonged, in three different ways. First, by affording a great and ready market for the rude produce of the country, they gave encouragement to its cultivation and further improvement. This benefit was not even confined to the countries in which they were situated, but extended more or less to all those with which they had any dealings. To all of them they afforded a market for some part either of their rude or manufactured produce, and, consequently, gave some encouragement to the industry and improvement of all. Their own country, however, on account of its neighborhood, necessarily derived the greatest benefit from it; its rude produce being charged with less carriage, the traders could pay the growers a better price for it, and yet afford it as cheap to the consumers as that of more distant countries. Secondly, the wealth acquired by the inhabitants of cities, was frequently employed in purchasing such lands as were to be sold, of which a great part would frequently be uncultivated. Merchants are commonly ambitious of becoming country gentlemen, and when they do, they are generally the best of all improvers. A merchant is accustomed to employ his money chiefly in profitable projects; whereas a mere country gentleman is accustomed to employ it chiefly in expense. The one often sees his money go from him, and return to him with a profit; the other, when once he parts with it, very seldom expects to see any more of it. Those different habits affect naturally their temper and disposition in every sort of business. The merchant is commonly a bold, a country gentleman a timid undertaker. The one is not afraid to lay out at once a large capital upon the improvement of his land, when he has a probable prospect of raising the value of it in proportion to the expense: the other, if he has any capital, which is not always the case, seldom ventures to apply it in this manner. If he improves at all, it is commonly not with a capital, but with what he can save out of his annual revenue. Whoever has had the fortune to live in a mercantile town, situated in an unimproved country, must have frequently observed how much more spirited the operations of merchants were in this way than those of mere country gentlemen. The habits, besides, of order, economy and attention, to which mercantile business naturally forms a merchant, render him much fitter to execute, with profit and success, any project of improvement. Thirdly, and lastly, commerce and manufactures gradually introduced order and good government, and with them the liberty and security of individuals, among the inhabitants of the country, who had before lived almost in a continual state of war with their neighbors, and of servile dependency upon their superiors. This, though it has been the least observed, is by far the most important of all their effects. Mr. Hume is the only writer who, so far as I know, has hitherto taken notice of it."

The Effect of a new and Extensive Gold Finding affects the "price" of agricultural produce, if not its "value," as shown by the following extract from Doubleday's "Financial History of England," and, no doubt, is doing so now:—"The grand alteration in the value of the precious metals, and, of course, of money along with them, to which I would refer the reader, is that which took place in about thirty years after the discovery of America, by Columbus, in A.D. 1492. The reign of Henry VIII. commenced in A.D. 1509. Before he had reigned twenty years, the conquest of Mexico and Peru had been completed by the Spaniards; and the Portuguese were busy in the Brazils, which they ultimately overran and subdued. From that time—that is to say, from the early part of the reign of Henry VIII., gold and silver continued to be poured into Europe, in unprecedented plenty throughout the period comprised in the sixteenth and seventeenth centuries, causing a continually growing circulation of money and a rise of prices in all commodities over all Europe, for which men were puzzled how to account, and which began to be sensibly felt in England about the middle of Henry's reign. This was the first time that men had witnessed the phenomena of a huge accession, all within a few years, to the precious metals then circulating; and to those living at the time the whole was a puzzle and a mystery. The enhanced prices were in England wholly attributed to monopoly, to hoarding, to forestalling, to large farms—to any cause but the true cause, which true cause was *the lowering of the value of gold and silver*, by the discovery of the rich mines of Mexico, Peru, and ultimately of the Brazils. To prove, then, the real effect of the vast and rapid addition to the circulating medium, we have only to take a bird's eye view of the prices before and after the event. Let us begin with wheat. The following is extracted from Adam Smith's "Wealth of Nations:"—"Prices of wheat before and after the opening of the American mines; Average, A.D. 1423 to 1451, 10s. 7d. per quarter; 1453 to 1497, 8s. 5d.; 1459 to 1560, 9s. 2d.; 1561 to 1601, 47s. 5d.; 1595 to 1636, 50s.; 1637 to 1700, 51s. 3d." Here we see that during the period between 1560 and 1601, a space of forty years, the average price of wheat has grown five-fold. Not that grain was scarce during those forty years, but because, throughout the whole of them, the precious metals kept pouring into Europe from Peru and Mexico, with a rapidity almost inconceivable. To show that the same effects were produced upon the prices of all sorts of merchant dize and commodities, I subjoin a curious document, extracted from Drake's "Eboracum:"—

Table of Prices.

Prices proclaimed at York, 1393.	£	s.	d.	Prices at York in 1733.	£	s.	d.
Strong Beer, per gal.	0	0	1¼	Strong Beer, per gal	0	2	0
A milder sort, "	0	0	1	Mild Ale	0	1	0
Finest Claret Wine..	0	0	8	Best Claret	0	17	0
All Common White Wines, per gal...	0	0	6	White Port	0	8	0
				Red Port	0	6	8
Carcass finest Beef..	1	0	0	Choice car. of Beef.	9	10	0
Next Best	0	14	0	Next Best	8	0	0
Scotch Kyloe Ox car.	0	12	0	Scotch Kyloe	4	4	0
Ditto Cow	0	10	0	Cow, ditto	3	0	0
Carcass of Mutton, best	0	1	8	Carcass of Mutton, best	1	10	0
Ditto, worse fed	0	1	6	Ditto, worse fed	1	0	0
Carcass of Fine Veal	0	2	6	Carcass of fine Veal	1	6	0
Another sort, ditto..	0	1	6	Another sort, ditto.	0	15	0
A Lamb	0	0	8	A Lamb	0	12	0
A fat Pork Hog	0	3	4	A Fat Pork Hog	2	10	0
A Smaller Pig	0	3	0	A Smaller Pig	2	0	0
A Capon	0	0	4	A Capon	0	1	9
A Hen	0	0	1¼	A Hen	0	0	9
A fat Goose	0	0	4	A fat Goose	0	2	0
A doz. of Pigeons...	0	0	3	A doz. Pigeons	0	1	3
A Woodcock	0	0	1¼	A Woodcock	0	0	9
A Teal	0	0	1¼	A Teal	0	0	9

The Present and Past Condition of Agriculture in its relation to Manufactures.—Agriculture enjoys great privileges and advantages now, in comparison with former times. The skill, capital, and enterprise of our manufacturers, aided by that great invention steam, has raised up an enormous population of customers non-agricultural, placed at the disposal of agriculture cheap and abundant clothing, as well as more perfect and less costly implements of agriculture. In 1487 three-quarters of corn were given for one yard of fine broadcloth; now the quantity obtainable would be near eight yards; nobody wore knitted stockings until Queen Elizabeth's reign. She is said to have been the first person in England to wear them. She received them as a present from the Spanish ambassador. We all know that our ploughshares and other agricultural implements harmonize in reduction of price with our cheap cotton and woollen manufactures. The village Church on the Sabbath presents the pleasing pattern card of elegance and cheapness. The wife and children of the agricultural labourer, whose weekly wages represent the value of one bushel of flour, are clad in colours, patterns, and qualities that convince the observer how much agriculture owes to the science and skill of manufactures. The recent discovery of the sewing machine has multiplied by millions the powers of the seamstresses. But how has all this been brought about? Not by an obstinate adherence to old customs, but by a recognition of the value of science, and by an availment of its powers. In this respect agriculture has much to learn from manufactures, and must make haste to follow its example.

The Future of Agriculture must be based on a General Use of Steam Power.—This has made manufacture what it is, and will make agriculture what it ought to be. At present we can scarcely say that agriculture has used steam—possibly she may now have 50,000-horse power: she will soon have at least a million of horse-power. I speak practically and guardedly on this matter. Every farmery of 100 acres will, for the purpose of cultivation and general manipulation, require four-horse power. If 100 acres require four-horse power, sixty millions of acres will require 2,400,000 horse power.

The Topography of our Farms inflicts a Gigantic Charge on Farm Produce.—It is singular that, whilst 1,400 years ago the civilzed Romans left with us indestructible examples of facile intercommunication by broad and well-made roads, straight as the flight of an arrow, we content ourselves with perfect contortions in our roads and lanes. To sit down and calculate in detail the loss occasioned by these deviations from rectitude, would produce an alarming and astounding aggregate. But how is this now to be remedied? No one will attempt the task with our present cumbrous, costly, and ridiculous mode of transfer; and so one item, or rather one means, of a successful competition with foreign production is debarred from us. The financial history of the cost of a quarter of wheat, in all its details, would afford an instructive and profitable lesson, and would exhibit a biting satire and a severe rebuke. It would humble our agricultural pride, and would show that we cannot, as agriculturists, stand the test of commercial criticism. When I say this, let it be understood that I especially refer to the duties and shortcomings of landowners, who, being principally our law-givers, have the power (if they choose to exercise it) of amending the laws of Conveyancing. Assuming that the frequent removal of heavy steam engines and machinery from one part of the farm to another, or from one farm to another, will render necessary temporary railroads, or very improved public and farm roads, it becomes of the utmost importance on the score of economy, that our agricultural topography should be amended. A farm of 640 acres would fill one square mile—the buildings being central and the road straight, every portion would be readily accessible; but if a survey were to be given to us of the existing topography of every farm of that size, it would reveal a barbarous waste of means intolerable in this age of practical economy.

Rarey on the Training of Horses.

The education and training of horses, (we purposely avoid the word, "breaking" in popular use,) is an art similar in kind in many respects, to that of educating and training children and youth. In regard to both, children and colts, it is essential to success, that two points be well established, viz., the superiority of the master and his uniform kindness toward the child or the colt to be educated and trained for service or usefulness. With regard to both there will be found as there has been, a great diversity of capacity

and susceptibility for training. Some horses appear genial and good willed, quick to apprehend what they are wanted to do and show a readiness to do it: others are ill-willed, stupid and dull of apprehension. The same is true of children and youth. Hence a diversity of treatment is required from the teacher who undertakes to train either colts or children. The master who kindly appeals to the good qualities of his pupils and treats them with affection, if he has capacity, patience, persistence, and firmness, cannot fail of obtaining the highest success whether his learners be rational creatures or brutes. The docility of the animal is drawn out by kindness, without which but little can be effectively taught or communicated, whatever the capacity of the creature may be.

The elements of good government are knowledge, wisdom, firmness, patience, persistence, kindness and affection. Where these are found in exercise, combined with experience and observation, there is a good disciplinarian, whether his attention be turned to educating and training colts and steers, or boys and girls. Such a combination makes up what is called the law of love, as set over the law of force. We have all read the fable of the sun and wind in which is exemplified the triumph of mildness over that of force in disrobing a traveller of his cloak. What force could not do, genial gentleness soon effected. It is in the latter that the power of Mr. Rarey in horse-taming is found over that of the old-fashioned "horse-breaker," as formerly called.

The horse, like a child, soon becomes fond of those who treat him affectionately. Hence, harsh words and rough treatment are out of place in training colts to the harness or to the saddle. Having secured the confidence and fondness of the horse, man can do almost anything with him that he desires. It is important, therefore, to teach the horse what it is desired he should do and submit to. Mr. Rarey first shows the saddle to the colt rather than place it upon his back in a sly way as is often done. So of the harness. In this way, almost any horse may be taught to fear neither an umbrella nor drum, or anything else, that is at all common for the animal to see or hear. Mr. Rarey would have others do as he does himself, approach the horse gently with his eye full upon him when he is about to begin the work of taming the creature. Let the horse become accustomed to the touch of man. Handle his head and neck and limbs in a manner that betokens gentleness and kindness, perfectly devoid of fear and ill-will. Take up the foot of the animal, strap it up as indicated last week in an article on another branch of this subject, and in due time do the same with respect to the other fore-foot, and the animal will soon become tired of struggling, and will lie down and become submissive. Then continue to treat him with familiarity and fondness handle the parts where he formerly showed the greatest unwillingness to be touched, and very soon he learns that there is nothing to fear from the touch of man. Show him the umbrella which he formerly feared, and the drum that excited alarm, and he very soon becomes fearless of both as has been too often demonstrated by Mr. Rarey and his disciples to admit of a doubt or a query. Thousands can testify to the truth of this as they can to the cure of kicking, or the sensitiveness of grooming about the ears or the hind legs, or the trouble in shoeing.

Cruiser, one of the worst horses ever known, has become, under this treatment, almost as docile as a lamb and as gentle as a child, doing the bidding of his master as if it afforded him the greatest pleasure.—This was a case that baffled all attempts of force as far as subduing the animal for use was concerned. Mr. Rarey, by kindness, has overcome the exceedingly irritable and bad temper of the beast, subjugated his viciousness and rendered him entirely docile. Let the cruel, rough, noisy "horse-breakers" ponder this new system of taming, educating and training horses, and one of the noblest of domesticated animals will be spared from that inhumane treatment of which the horse is too often the victim. The barbarous way of training colts and steers, which has been too often seen, must give way to this intelligent and humane mode of training them for usefulness upon the farm and the road. The dark age of man's cruel treatment of the horse, called "breaking," must pass away, and the system of kindly educating and training him take its place.

Says a modern English writer, there is not a more noble and useful animal than the horse and none more liable to hardship and ill-usage. Cruelty to animals,—a humiliating truth for Christendom to acknowledge,—exists mostly in civilized society, and civilized society "only" require the existence of laws to protect the brutes from inhumane treatment, to which they are often subjected in spite of humane laws. The savage of the desert shows a humanity to the savage that serves him, and the most untutored even are seen to be most sensible of feeling towards the willing slaves of barbarians. In no case whatever should any cruelty be allowed in the working of horses. A gentle correction may be tolerated, but the unmerciful beatings of them with whips, rods or sticks and the kicking of them with a heavy boot or shoe by the driver, should be immediately checked, and if an employe, he should be immediately dismissed, and if the owner, prosecuted and punished as the law provides. The farmer, or gentleman should make this rule known to those he employs to drive his horses. Conduct more reprehensible and disgraceful can hardly exist, or a feeling more degraded can scarcely be imagined than that of abusing the horse. In no point perhaps in the whole circle of agricultural economy,

should the master's authority be more vigorously exercised or more imperatively enforced. The offence is one that admits of no excuse but unfitness for the place, and being without palliation is, therefore, entirely unpardonable.

The secret of good government in the family, the school and the State, the nation, and in the stable, alike, will be found in the distinct recognition and the unqualified acknowledgement on the part of the governed of the right of those in places of authority to exercise power and control over those, for the time being, who occupy subordinate relations. When and wherever this is the case, a well-ordered family or school is found. In all other cases, disorder and confusion prevail; for where no rightful authority or superiority is recognized, there will be no willing obedience, but a continual conflict and strife. In how many families and schools is this the case to-day. The same is true of domesticated animals with regard to their keepers. Mr. Rarey's success, as we have already said, lies in his complete demonstration to the understanding of the over-sensitive or vicious horse, that he is in the power of the horsetamer and trainer. When satified of this the horse yields, and his education begins when he learns that man is his superior. Hence the willingness with which he obeys and serves his master; also the unwillingness to serve an inferior. In this view lies the secret of willing submission; also that of disobedience. Hence to our mind Mr. Rarey's system of horse-taming is based upon philosophical principles, which underlie all governments, whether human or divine, in regard to both man and beast.

Mr. Rarey gave a lesson on horse-taming Thursday evening week, and on Saturday afternoon, with as great success as heretofore. On Monday evening he gave a free entertainment for the benefit of the hackmen and truckmen, which was largely attended. Mr. Rarey's lectures have been well attended, and his entertainments in the training of sensitive and vicious horses exceedingly entertaining and satisfactory to those who witness them. Truly may he be denominated the benefactor of the horse, that noble animal, so essential to the wants and necessities of man, and yet, and we regret to say it, so often maltreated by his heartless owner or unmerciful driver or groom. May we not hope that a brighter future has dawned for the equine race?—*Boston Cultivator.*

Kohl-Rabi.

We take the subjoined article from the *Irish Times' Gazette* of March 16th. This root has been growing in Canada on a small scale, but with what result we are not informed. Perhaps some of our readers who have tried it will favor us with their opinions. The seed, we presume, can be obtained from our principal seedsmen.—Eds.

Every intelligent farmer who knows the value of root crops, knows all that is injudicious to limit his cultivation of that important class of plants to one kind. Were it not for no other purpose than merely to spread the busy season over as wide a period as possible, so that there would not be too much to do at once, a diversity is desirable; but it is still more so from the fact that the effects produced on stock are greater when we have a diversity at command, than when we are confined to only one or two kinds. Some kinds of roots are good for one purpose, others for another purpose; some kinds are suitable for consumption at one period, others at a later period, and others again still later. Another advantage is that a variety of roots lessens the risk of loss of a supply of winter food from the failure—total or partial—of any one kind, and hence the judicious cultivator will not limit himself to one or even two kinds of root crops.

Believing, as we do, that root culture is of the most essential consequence, we proceed to describe briefly the cultivation of an extremely valuable variety of this class; it being necessary to commence operations at the present time, as will be seen in the course of the following remarks.

Although kohl-rabi has been partially cultivated for many years, especially in England and Ireland,* it is only of late that its value has become generally known, that is, comparatively so; because there are still many farmers, extensive growers of root crops, who are yet unacquainted with it. This plaint is sometimes designated the "turnip-stemmed cabbage," the "Hungarian turnip," as well as other names; but its proper designation is that under which it was first introduced, viz., kohl-rabi.

There are eleven varieties in cultivation, those best suited for field culture being the Late Green or White Kohl-rabi, the Late Purple, the Oblong Purple, and the Giant Green Globe; the latter, recently introduced from Germany, being highly spoken of.

Kohl-rabi may be grown on any turnip soil, but it thrives best on heavy lands, even when these are of too stiff a nature for turnip cultivation. The preparatory operations during autumn and spring are the same as those for turnips, etc. A full supply—20 to 25 tons per statute acre—of farm-yard dung must be given, and the addition of light manures, containing a

* "In 1734 the kohl-rabi was first brought into notice in the field culture by Mr. Wynne Baker, the Secretary of the Dublin Agricultural Society."—Lawson. J. R. A. S. E., vol. 20.

considerable portion of phosphates—such as phospho-Peruvian guano, bones, superphosphate, etc.—is highly desirable. Salt is also a valuable auxiliary in the cultivation of kohl-rabi, and it may be applied at the rate of 4 cwt. to 6 cwt. per statute acre.

Kohl-rabi seed may be sown in the end of April or beginning of May, in the same manner as turnip seed; but the better plan is to grow the plants in a seed-bed; transplanting them when they are six or eight inches high into drills in the field. The seed-bed should be dry, and manured in autumn or during winter, and the place chosen should be a sheltered spot, open to the sun. In the end of February or during March sow the seed, in the bed, thinly in drills, 12 inches apart. This permits the use of the hoe afterwards, for the purpose of keeping the beds clear of weeds, as well as stiring the soil, which promotes the growth of the young plants. A second sowing may be made in the beginning of April, and a third sowing at the end of May or beginning of June. "A bed six yards square will afford sufficient plants for one acre (statute) of land; and 8 oz. of seed will be necessary for the seed bed"—(Lawson). The first sowing will be ready to be transplanted in May, the second sowing in June, and the third towards the end of July or beginning of August. The first sowing will be transplanted into part of the regular green crop break; the plants obtained from the others will follow vetches, etc.

About the beginning of May part of the green crop division will be prepared, drilled at 27 inches, and dunged with farm-yard manure and the auxiliaries we have mentioned. After the drills are closed a light roller should be passed along to level the tops. The plants will then be taken from the first sown seed-bed, and dibbled in about 16 or 18 inches apart along the top of the drills. Moist weather is best for transplanting. If "clubbing," or warts, each containing a small maggot, is found on the plants in the seed-bed—similar to the "clubbing" common on cabbage plants—it has been recommended to dip the stems, as the plants are lifted upon the seed-bed, in the following composition: fresh soot one gallon; powdered saltpetre, one pound; water being added "reduce it to the consistency of coal tar."

The plants obtained from the second and third sowings will not produce as heavy crops as that from the first sowing. It will be necessary therefore, when transplanting, to dibble in the late plants closer than in the case of the first sown. Those transplanted in June will be dibbled 14 to 16 inches apart, and those in July or beginning of August from 12 to 14 inches. The after cultivation consists in the frequent use of the horse hoe, until the leaves meet in the drills, with the hand hoe to stir the soil between the plants in the lines.

The leaves of kohl-rabi are quite as valuable for feeding purposes as the bulbs, and both "are about twice as valuable as ordinary turnips, and materially surpass the best swedes"—(Anderson). The plant also stands intense frost, and as it keeps well either stored or in the field, it is extremely valuable for spring use in the case of fattening sheep or ewes. It does not affect milk or butter when used as food for cows. If the plant is stored in November, like turnips, etc., the storing process need not proceed faster than the consumption of the leaves will admit, as it would be improper to waste the leaves, considering their value as food; whilst the frost-resisting properties of the bulb render it unnecessary to store early, merely for the purpose of saving the bulbs from damage.

Kohl-rabi is relished by every description of stock. Sheep may be folded upon the crop where it grew, or the bulbs may be given them sliced in boxes; for cattle the bulbs require to be sliced or pulped, and steamed or boiled for pigs. Messrs. Lawson sum up the special features of khol-rabi in the following terms:—

"Its advantages over the swedes are, that cattle, and especially horses, are fonder of it; the leaves are better food; it bears transplaning better than any other root; insects do not injure it; drought does not prevent its growth; it stores quite as well or better; and it affords food later in the season, even in June."

Agricultural Intelligence.

Carrot and Spring Wheat Matches of the United Agricultural Societies of York Township.

At a meeting of the members of this Society held at Eglinton, January 31st last, it was resolved,—

That a Match or trial of skill in the cultivation of the Belgian Carrot be held this year, open to the surrounding Townships; the quantity of land to be one-quarter of an acre, under the control of the Directors.

Persons wishing to compete at the Carrot Match shall each pay the sum of $3 on or before the 1st May next ensuing, and the same shall constitute him a member of the Society for the year. It was also resolved,—

That a Match in Spring Wheat, not less than two acres, be held under the auspices of the Society this year, open to the surrounding townships.

Persons not members of the Society, wishing to compete at the Spring Wheat Match, each to pay the sum of $3 on or before the 1st May, and the same shall constitute him a member for the year. Those already members to pay the sum of $2 each.

Provincial and State Shows for 1860.

Canada West, at London,	Sept. 24, 25, 26, 27
Illinois, at Chicago,	Sept. 9, 10, 11, 12, 13, 14
Iowa, at Iowa City	Sept. 24, 25, 26, 27
Kentucky, at Louisville,	Sept. 17, 18, 19, 20, 21
New-York, at Watertown,	Sept. 17, 18, 19, 20
Oregon,	Oct. 1
Wisconsin,	Sept. 23, 24, 25, 26, 27, 28
Wisconsin Agricultural and Mechanical Association, at Milwaukie,	Sept. 2, 3, 4, 5, 6

County and Township Spring Shows.—We have notice of the following Shows to take place this Spring:—

West York, with York, Vaughan and Etobicoke Townships, at Weston, April 24th.

North and south Wentworth and Hamilton city Horse Show, at Hamilton, April 25th.

Whitchurch, Show and plowing match, on the farm of Mr. Israel Clubim, 5th Con., April 24th.

West Gwillimbury, at Bond Head, April 25th.

East York, Scarboro and Markham, at——— April 25.

North York Riding and King Township, on the farm of Mr. Joel Lloyd, Yonge Street, 23rd April.

London Township, at Montgomery's Hotel, London 23rd April.

Haldimand County, at Cayuga, April 25th.

Rainham, at Rainham Centre, April 18th.

Walpole, at Haurtent's Tavern, April 24th.

Seneca, Oneida and Cayuga, at York, Grand River, April 26th.

South Wellington and Guelph Township, at Guelph, May 1st.

Horticultural.

Dwarf Trees.

To the Editor of the Agriculturist.—In your last number Dr. Beadle asks for some information respecting dwarf apple trees, from those who have had practical acquaintance with them. Eight or ten years ago, I imported from England a quantity of Paradise stocks, and grafted many of the largest as soon as they arrived and put them in the g round. The tops that were cut off were planted as cuttings, and grew up freely. In a few years I planted them out about two feet apart each way, expecting soon to have beautiful little bushes loaded with fruit according to Horticultural books on the subject; but in about two years I found they grew so freely that I had to transplant every other row, and every other tree in the row that were left. They are now very handsome bushes, branching out close to the ground, and many of them eight or nine feet high, but many of them have not yet borne fruit. In pursuance of Downing's advice in his work on fruit many were grafted with Northern spy, expecting an early supply; but my experience is that apples on Paradise neither bear sooner nor make smaller trees than on common apple stocks. If I wanted more dwarf apples, I should be quite indifferent whether I used Paradise or common apple stalks, but I should graft them with Hawthorn dean, Keswick Codlin, or Duchess of Oldenburg, and train them as bushes; but for most situations I should prefer stems from 1 foot to 6 feet, according to the climate and the situation (whether orchard or garden) for which they were intended. I may observe that the Paradise stocks are much better rooted than common stocks, and of course the trees bear much better, whether they will be as lasting I cannot say.

My experience with dwarf pears is something the same. I find my pears upon quince grow faster and more luxuriantly than on pear stalks, but I get fruit about as soon upon pear stalks, about the third year from the graft. My soil is a warm dry gravel, likely to promote early productiveness rather than otherwise. Perhaps I had better add, that I have neither Dwarfs nor Standards of either apple or pear for sale, but am raising both solely for my own use.

John Atkins.

Near Fonthill, C.W., 4th of 4th mo. 1861.

The Garden.

In dry, warm soils the putting in of garden crops is usually proceeded with in this month, but the present backward season will throw much of the work into May. The ground should be dug and manured as soon as the weather will permit, but it is not advisable to sow the crop till both soil and air have attained to a suitable state of warmth and dryness. Peas, early potatoes and summer cabbage, spinage, salsify, onions, lettuce and radishes, require the best attention of the gardener, afterwards come carrots, parsnips, late cabbage, beans, beets, &c. Among permanent crops, may be mentioned,—asparagus, rhubarb, sea-kale, parseley, thyme,

sage, and the different kinds of pot and domestic herbs. The flower garden should now be got into order, and prepared for sowing the various kinds of annuals, &c., and transplanting flowers, as the season for all these operations is now at hand.

We take the following brief directions for cultivating a few of the more ordinary garden crops and the varieties adapted to this climate, from the Descriptive Catalogue of Mr. J. Fleming, seedsman and florist of this city :—

Asparagus.—Large Giant.

Asparagus beds should be well drained by a layer of stones, oyster shells, or bones, on which lay brushwood cuttings and some turf. On this make the bed of sandy loam, stable manure, and coarse sea or river sand, (but avoid yellow or brown sand containing iron.) Lay this on the drainage bottom two feet thick, then put the roots on it, in rows eighteen inches apart, and a foot apart in the rows, cover four inches with same compost. Before winter cover the bed with leaves and manure about four or six inches. In spring, fork in the manure slightly and give a good dressing of salt.

English Broad Beans.—Broad Windsor, Early Mazagan, Monarch Long Pod.

Broad or *Windsor Beans* do not succeed well in this climate, the summer heat coming on them before they are podded, which causes the blossoms to drop off. The best soil to grow them is a rich stiff clay, and on a northern border, shaded from the mid-day sun. Sow in drills two feet apart, the drills two inches deep, and the seeds three inches apart.

Dwarf or Snap Beans.—Dwarf Yellow six weeks, Dwarf White Speckled, Dwarf Red Kidney, Dwarf Black Speckled, Royal Dwarf, Dwarf China, Pink Eye.

Kidney or *French Beans* may beplanted any time in May, in drills, two inches deep, the beans two inches from each other, the drills about eighteen apart. If a regular succession is required, sow a few every few weeks from the 1st of May to the 1st of July.

Running or Pole Beans.—Lima or Butter Beans, Scarlet Runners, Case Knife, Red Cranberry.

All described under this head require poles eight or ten feet long. They are planted at the same time with the dwarf beans, and, like them, require a warm mellow soil. Stick the poles three feet apart each way, raise a hill, and plant around them six or seven beans ; cover one inch deep with light, mellow earth.

Beet.—Long Smooth, Extra Long, Long Blood, Early Turnip-rooted.

Blood Beet, Long and Turnip, may be sown in a good, rich, deep soil, about the first week in May. Draw drills about a foot apart, and one inch deep ; sow moderately thick, when the plants are up strong, thin them out the distance of six inches from each other in the rows.

Borecole or Greens.—German Greens, Scotch Greens.

This is the general term for that class of cabbage tribe which do not head, but are used for greens in their open growth. Sow in seed-bed about the middle of May, and when of suitable size transplant to eighteen or twenty inches apart each way, and cultivate like cabbages.

Brocoli.—Early Purple Cape, Early White Cape, New Walcheren.

Cauliflower.—Early London, Extra Early French, Late French, Half Early Paris.

Brocoli and *Califlower* require a deep rich soil, of a clayey nature and highly manured. To produce early cauliflower or brocoli, the seed ought to be sown in a hot-bed early in March. When the plants are quite strong and hardy they may be planted out in the garden about the middle of May. Plant in rows two feet square. The kinds that will do well in this climate are the Early London and French Cauliflower, Purple Cape and Walcheren Brocoli.

Carrot.—Early Scarlet Dutch Horn, (for forcing,) French Horn, Long Orange, Fine Selected Altringham, Early Horn, Half Long Scarlet, Red Altringham, Red Surrey, White Belgian, (for field culture.)

The most suitable ground for growing carrots is a deep, rich soil, that has been well manured the previous year. Sow any time in May, in drills one foot apart and one inch deep. When the carrots are up, thin them out four inches apart, and keep the ground free from weeds. The kinds that are generally sown in gardens are the Early Horn, Long Orange, and Red Surrey ; for field culture the White Belgian and Altringham. The produce of one acre of field carrots, when properly cultivated, may be rated at from 800 to 1000 bushels. In cultivating them on the field system, the drills ought to be two feet apart, and the carrots thinned out at least twelve inches asunder.

Cabbage.—Early York, Sugar Loaf, Winningstadt Large Early Summer, Shilling's Queen, (new,) Late Quintal, (new and fine,) Early Dutch (new and fine,) Large Drumhead, Red Dutch, for pickling Savoy Marcilen, (new,) Large Cabbage Savoy, Large York, Early Battersea, Atkins' Matchless, (new,) Enfield Market, St. Dennis, (new and fine,) Flat Dutch, Savoy Green Curled, Savoy Cattle's (new.)

Cabbage, both early and late, may be sown any time in May. The best situation for raising the plants is a rich damp piece of

ground, partially shaded. Seed sown in a situation of this kind is not so subject to be destroyed by the black flea. When the plants are strong they may be planted out in rows and managed the same as directed for cauliflower. The best kinds for summer use are the Early York, Large York, and Winningstadt; for winter use the Drumhead, Flat Dutch, Quintal, and St. Dennis.

Celery.—White Solid, Seymour's Superb, Cole's New Crystal, Red Solid, Cole's Solid Red, Cole's White, (superb.)

This vegetable is much esteemed as a salad. It requires considerable attention to grow it to perfection. To have early celery, the seed requires to be sown in a hot bed in the month of March; for winter celery, the seed may be sown any time before the middle of May. Sow on a small bed of fine rich earth—beat the bed down with the back of the spade; sift a little fine earth over the seed; shade the bed with a mat or board until the plants begin to appear. Celery plants ought to be picked out into a nursery bed as soon as they are two or three inches high. Cut the roots and tops a little before planting; water them well and shade them from the sun until they begin to grow. Let them remain in the nursery-bed about one month, after which they will be fit to transplant into the trenches. The best sort of soil to grow celery in is deep rich loam, and in an open part of the garden. Mark out the trenches a foot wide and three feet between each trench. Dig the trenches one foot deep, laying the earth equally on each side. Put three or four inches of well-rotted manure into the bottom of each trench; put a little of the surface soil over the manure; dig it well up, incorporat the soil with the manure; dress the plants by cutting off the long leaves and the end of the roots. Plant in single rows along the centre of each trench, allowing six inches between each plant. Water them well, and shade them from the sun until the plants begin to grow. In earthing up celery great care should be taken not to cover the heart of the plant.

Cucumber.—Long Prickly, Early Frame, Short Prickly, Long Ridge. Also, the following choice varieties for frames: Sir Colin Campbell, Manchester Prize, Sagg's Royal Exhibition, Prize Fighter, Conquerer of the West, Sion House.

Cucumbers may be sown in the open ground any time in May. They require a good rich soil. Sow in hills four feet apart, leaving only three plants on each hill. The cucumber and melon vines are liable to be attacked by a yellow fly or bug. Soot, charcoal dust, and soap suds, applied to the plants will assist in keeping them off.

Endive.—Green Curled, White Curled.

Is a hardy annual, cultivated principally for a winter salad. It is also used in stews and as a garnish for the table. Sow from late in the spring to the middle of summer, in shallow drills fourteen inches apart; thin the plants to one foot in the drills, and, when fully grown, tie over the outer leaves of a few plants every week or fortnight, in dry weather, to blanch, which takes from one to three weeks. Draw up a little earth to the base of the plants. Rich. mellow soil in an open situation, is most suitable.

Egg Plant or Guinea Squash.—The Egg Plant is a very tender vegetable, requiring a hot-bed to bring it to perfection. *Early Long Purple.*—The earliest and most productive. Fruit long and of superior quality. *Large Oval Purple.*—This variety is more generally cultivated. It grows to a large size, oval shape, and dark purple colour. There is a prickly and a smooth stemmed sort. The prickly grows the largest, and the Smooth Stemmed is the earliest.

Sow in hot-beds early in the spring and transplant to two and a half feet apart each way, in very rich, warm ground. Draw earth to the plants as they advance. For the want of a hot-bed, the seeds may be sown in window pots early in the spring, or later, on a warm light bed, made in a sheltered part of the garden.

Leek.—Large Flag.

Sow very early in spring, in drills six inches apart, and one inch deep. Thin out to one inch apart, when they are about seven inches high, plant them out in rows eight inches apart and as deep as possible not to cover the centre young leaves. Water them thoroughly if dry weather when planted out. Draw earth up to them as they grow. Require very rich soil. Take up and store away before winter.

Lettuce.—Paris Coss, True Malta or Drumhead, Curled Silecia, Victoria Cabbage, Simpson's Early, for forcing.

Lettuce is easily raised from seed, which may be sown from the 1st of April to the end of June. If good headed lettuce is wanted, the plants should be transplanted out on a rich piece of ground in drills, twelve inches apart and six inches in the drill. The Malta or Drumhead and Victoria Cabbage are the most suitable kinds to sow, as they head without tying up.

Onion.—Large Pale Red, Large Yellow, Weathersfield Large Red, Danvers Yellow, Early.

The yellow and large red are the best for a general crop.—The ground for onions should be well prepared, by digging in plenty of well-rotted manure. The seed may be sown from the middle of April to the middle of May. Sow in drills one inch deep and twelve inches apart. When the young onions are up, thin them out to the distance of three inches apart.

Peppers.—Large Red, Cherry, Small Red.

Sow early in hot-bed, or in open ground in a seed bed, about the middle of spring, in a warm light ground. When three inches high, transplant to eighteen inches apart each way; hoe frequently.

Parsley.—Curled, Double Curled, Myat's Matchless, (for garnishing.)

Soak the seed a few hours in luke-warm water, and sow early in spring in drills an inch deep and one foot asunder. Thin out the plants to four inches apart. To preserve in winter, remove some plants and set them in a light cellar.

Parsnip.–Dutch Hollow Crown, Long Smooth White.

Parsnips require a deep rich soil. Sow in drills, one inch deep, and the drills 15 inches apart. Cultivate the same as directed for carrots.

Pumpkin.—Common Field, Mammoth, Cheese.

May be planted in the middle of spring, amongst the Indian corn, or in the field or garden, in hills eight or ten feet apart each way, with four seeds in a hill. In other respects, are cultivated in same manner as melons and cucumbers; but avoid planting them anywhere near either of those.

Peas, Extra Early.—Daniel O'Rourke, 2½ feet high, Early Frame, 4 feet high, Early Kent, 2½ feet high, Bishop's Long Podded, 1½ feet high. For general crop,—Champion of England, very fine, 4 feet high, Blue Dwarf Imperial, 2½ feet high, Harison's Perfection Dwarf White Marrow, 2 feet high, Harrison's Glory Dwarf Blue Marrow, 2 feet high, Napoleon's Dwarf Blue Wrinkled, 2 feet high, White Marrowfat, 5 feet high, Missouri Marrowfat, 3 feet high.

A light dry soil, not over rich, suits the pea. If they grow too vigorously and show no sign of bloom, run a spade along about eight inches from the row straight down, and thereby root prune them. Do this each side the row, and they will bloom in a few days. Plant as early as the ground can be worked, and again every two weeks for succession throughout the season. Plant in single or double rows from four to six feet apart, according to the different heights, about an inch apart in the row, and three inches deep; hoe often. In dry weather peas should be soaked in soft water five or six hours before planting, and if ground is very dry it should be watered in the hills.

Radish.—Early Frame, (Wood's,) Scarlet Short-top, Long Salmon, Scarlet Turnip, White Turnip, Black Spanish, Rose Olive Shaped.

Radishes should not be sown in the open air, sooner than the middle of May. They require a deep sandy soil, that has been well cultivated and manured the previous year.

Rhubarb.—Scarlet, Giant, Myat's Victoria.

Sow in drills an inch deep. Thin out to six inches apart. In the Fall, trench a piece of ground and manure it well; then transplant the young plants into it, three feet apart each way. Cover wit leaves or litter the first winter, and a dressing of coarse manure should be given every fall.

Squash.—Acorn, Canada Crookneck, Winter Boston, Custard Marrow, Early Scollop, Summer Boston, Vegetable Marrow, Hubbard, (Winter.)

Plant in hills, as cucumbers and melons—the bush three or four feet apart, and the running kinds from six to nine.

Spinach.—Round, Prickly.

Spinach is a useful vegetable, and very hardy. Seed sown in the month of September will stand during the winter, and come in for early greens in the spring. For summer use, seed of a round spinach may be sown from May to July. It requires a rich soil. Sow in drills one foot apart.

Salsify or Vegetable Oyster.

Salsify.—is an excellent vegetable. The roots, when properly cooked, resemble oysters in flavor. The seed may be sown from the first of April to the middle of May. They require the same kind of soil and cultivation as directed for carrots.

Turnip for Garden Culture.—Early White Stone, Early Yellow Maltese, Golden Ball, Early Snow Ball, Orange Jelly, Yellow Alteringham.

Sow from the middle of May to the middle of August.

Facts to be Remembered.

To take time by the forelock in everything which relates to gardening, and never omit what ought and can be done to-day, till to-morrow. It is hard to catch up in gardening when once behind.

To choose the best seeds to be had, and if possible to obtain them from responsible seedsmen.

Never to buy *cheap seeds*, because they cost less. They may be the *dearest* in the end.

To select the best implements, brand them with your name and never let them get *rusty*.

To stir the soil often during drought to prepare it more readily to receive and retain moisture from the atmosphere, and to prevent the plants from being stunted in growth.

Never to work the ground when it is wet and heavy. It renders it compact and lumpy during the whole season.

To perform everything in the best manner, and to complete one operation before commencing another.

Never to suffer weeds to encumber the growing crop, or to go to seed; nor allow any sort of trash to remain in the alleys or plots to mar the *neat and clean* appearance of the garden.

"Plough thorough and deep, while sluggards sleep,
And you shall have corn to sell or to keep."
Poor Richard.

Flowers.—The body and the spirits are alike improved by the cultivation of the garden. It offers an enjoyment for which no one is too high or too low. More grows in the cottar's plot than flowers: the cultivation of pansies may tend to his heart's ease; the bed of the thyme may speed a dull hour; and kind thoughts spring up while watering the clump of forget-me-nots.—Everywhere the heart of man blesses flowers: the child seeks them in the hedges; the old man finds, in their culture and study, soothing recreation and delight; Pagan and Christian have used them in their rites; flowers deck the bride, and are strewn on the grave. In every country they smile around us; to every grade they offer enjoyment; they give additional beauty to the new palace; they lovingly shroud the decaying ruin. Babylon had its hanging gardens; Greece, its roses and lillies—

"*Lilia mista Rosis;*"

and Rome its box-trees cut into figures of animals, ships, and letters; to say nothing of its violets and crocuses. Our first parents, indeed, came into the world in a garden, and Milton makes Eve say, as amongst her griefs:—

"O Flowers,
My early visitation and my last
At even, which I had bred up with tender hand
From the first opening bud, and gave ye names,
Who shall rear ye to the sun, or rank
Your tribes, and water from the ambrosial fount?"
Builder.—

Ashes for "Club-Feet" in Cabbages.—A correspondent of the New-England Farmer has succeeded in raising fine cabbages, on old garden soil, where for sometime they have failed from "club-feet," by the use of wood-ashes.—When setting the plants, half a pint of wood-ashes was placed in each hill, and immediately in contact with the roots of the plants. Every one succeeded.

Currant Bushes.—It is said that an application of air-slacked lime, in early spring, around currant bushes, preserves the foliage from the attack of the insect, which occasions the unsightly and diseased appearance of curl in the leaves.

Instinct of Plants.—Hoare, in his treatise on the vine gives a striking exemplification of the instinct of plants. A bone was placed in the strong dry clay of a vine border. The vine sent on a leading, or tap-root, directly through the clay the main root threw out fibres, but when it reached the bone it entirely covered it by degrees with the most delicate and minute fibres, like lace, each one sucking at a pore in the bone, like a litter of pigs at their dam as she lies down on the sunny side of the farm-yard. On this luscious morsel of a marrow bone would the vine continue to feed as long as any nutriment remained to be extracted. What wonderful analogies there are running through the various forms of animal and vegetable creation, to stimulate curiosity, to gratify research, and, finally, to lead our contemplations from nature, in a feeling of reverence, "up to nature's God."

As to the vine spoken of by Hoare, it is worthy of remark that the root went no farther than the bone, which it seemed to have literally smelt out, as would a hungry dog, in passing.

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

(*Continued from page* 190.)

LENNOX.

County Society.—One hundred and twenty-three members; amount of subscriptions, $123; balance from previous year, $37.93; deposited by townships, $128.50; government grant, $439.20; total received, $728.63; paid for copies of Agriculturist, $56; paid township branches, $389; paid treasurer of local committee, Provincial Exhibition, at Kingston, $250, expenses, $31.87; balance in hand, $1.76.

TOWNSHIP BRANCHES.

North Fredericksburgh.—Forty six members; subscriptions, $50; balance from 1858, $1.35; share of grant, $90; total received, $141.35. Paid premiums, $90.75; expenses, 26.40; balance in hand, $24.20.

South Fredericksburgh.—Forty six members; amount of subscriptions, $45.75; share of grant $59; total received, $104.75. Paid for Agricultural Journals, $45.75; balance in treasurer's hands, $54.

Richmond.—Thirty nine members; amount of subscriptions, $69; balance from previous year, $3.92; share of grant, $111.50; total received, $184.42. Paid in premiums, $144.75; expenses, $24.72; balance in hand, $14.95.

LINCOLN.

County Society.—Two hundred and fifteen members; subscriptions, $216; balance from previous year, $188.38; deposited by

township societies, $458; government grant, $599.96; grant from County Council, $150, special subscriptions and admission fees, $32; total receipts, $1644.34. Paid Township branches, $817 70; premiums at fall and spring shows, $537.25; expenses, $85.23; balance in treasurer's hands, $204.16.

TOWNSHIP BRANCHES.

CLINTON.—Seventy-three members; amount of subscriptions, entry fees, &c., $125; share of grant, $73; total received, $198. Paid in premiums, $176.25; expenses $21.75.

GAINSBOROUH.—Fifty-two members; subscriptions, $52; grant $40.87; total receipts, $92.87. Paid in premiums, $74.63; expenses, $13.66; balance in hand, $4.08.

GRANTHAM.—One hundred and sixty nine members; amount of subscriptions, $173; balance from 1858, $92.46; public grant, $157; grant from Township Council, $40; admissions, $12; total received, $474.46. Paid in premiums, $456; incidental expenses, $40; balance $21.54.

LOUTH.—Fifty-two members; amount of subscriptions, $53; balance from 1858, $2.57; share of public grant, $55.70; grant from Township Council, $20; total received, $131.27. Amount paid in premiums, $102.13; expenses, $14.25; balance in hand; $14.89.

NIAGARA.

ELECTORAL DIVSION SOCIETY.—Ninety six members; amount of subscriptions 1858, $140; do. 1859, $120; government grant 1858, $360; do. 1859, $216; grant from Lincoln County Council, $50, total received, $886. Amount paid in premiums, $378.25, expenses, $195.04; balance in hand, $312.71.

Extracts from Reports.

The Directors feel it a pleasing duty to be able to congratulate the Society upon the admirable displays made by the members, as well at the floral, fruit, and vegetable show held on the ninth day of July last, as at the subsequent general exhibitions held on the 20th September.

These shows were far superior, as well in the number of the entries, as in the quality and character of most of the articles exhiibted, to anything ever before witnessed in this vicinity, and this fact is indicative of the existence of a spirit of emulation which deserves to be carefully fostered, for it not merely augurs well for the future prosperity of the society, but serves to show that industry and enterprise are rapidly realizing the important fact, with all its beneficial consequences, that the Niagara electoral division is indeed the Garden of Upper Canada.

The superiority of our position, arising from advantages of soil and climate, have been most strikingly demonstrated during the past year. It was observed during the preceding winter, that the thermometrical observations recorded at Toronto, and other points to the northward and westward, showed the mercury at 10 to 15 degrees lower than it sunk with us at the same times, and while the frosts of last spring and the early summer in other parts of Upper Canada totally destroyed most of the fruit crops, the damage they caused in this division was so trifling as to be hardly worth mentioning. The beneficial results were experienced in the large quantities of peaches, plums, grapes, pears and apples, exported at good prices to Toronto, Montreal and other markets in Canada, some portion to the markets of the United States, and some to the Province of New Brunswick, and some even to Great Britain itself. Adding the quantity to required for home use to the exports, a total of 30,000 barrels would show the fruit crop of this Division.

From the experience of one of the members of your Society, it seems probable that, providing the Grand Trunk Railway and Montreal Steamers can arrange their freight tariff during the fruit season, so as to convey the products of our orchards from Toronto to Liverpool at a rate not exceeding a dollar and a half per barrel, our fruit-growers may look to Great Britain as their highest remunerating market.

From the experience of other members of the Society, it is demonstrated that grapes can be grown here for manufacture into wine on any scale of extent which may be considered desirable, and that the wine produced, in the hands of men versed in the processes of manufacture, will vie in quality with the best of the imported articles.

The Directors feel it their duty to impress upon the members the benefits fairly to be anticipated from increasing the cultivation of marketable fruits, selecting the best sorts and most prolific bearers, and adapting the varieties to the most congenial soils; and they would also ask that experiments may be continued for the destruction of the curculio, and

for the extirpation of the disease which, under the name of "Black Knot," has so extensively affected plum trees of nearly all varieties, the results of such experiments, if serviceable, to be reported to the Secretary.

To the extension of the fruit crop, and to the cultivation of a greater variety of grains and roots than used to be the practice in former years, must we look for a mitigation of such a fearful calamity as we have suffered under for the four past years, through the detion of our great staple, wheat, by the ravages of the midge.

By the last census return, this Division stood at the head of the county of Lincoln Municipalities in the production of this grain. The annual production of the Township alone being reported at 62,970 bushels. In 1856 this crop was to a great extent destroyed by the insect; the farmers hoped the evil would pass away with the year, sowed their usual breadth of fall wheat, but only to find the destruction still more complete in 1857. In 1858 new crops were resorted to, and the injury and loss were less extensive; and in 1859, by strenuous exertions on the part of the farmers, blessed by Providence, great changes for the better have been effected, and farmers have ventured generally to sow a few acres of fall wheat each; the varieties selected being the Mediterranean, the improved blue stem, and the Kentucky white. The money loss sustained by this Division through the wheat midge alone, during the four past years, cannot be much less than 150,000 dollars, while the depreciation in real estate, through this and other causes, during the same periods, by far exceeds the sum stated, and if men in all stations do not exert themselves in all possible ways to produce a better state of things, individual industry and exertions will be in vain. The community cannot hope for better times so long as land will yield no more than 2½, while money produces 10 to 20 per cent. per annum.

During the past year, spring wheat (the Fife seems to be the only variety which can be depended on in this Division) gave a fair average yield, and of good quality Oats and barley, Indian corn, rye and buck-wheat, were all fair crops, and probably somewhat above the average. Hay was a short crop, but the price has made up for deficiency in quantity. All green crops, potatoes, turnips, carrots, mangel wurzel, onions, peas, and beans—were abundant, and although the rot caused considerable damage among some varieties of potatoes, it did not prove so very injurious as was at one time anticipated. Frequent changes in the seed of this valuable root are strongly recommended.

From some experiments which the Directors have noticed, they see no reason why hops and tobacco may not be profitably cultivated, the soils in some portions of the Division being well suited to these plants.

It remains for the Directors to advert to the result of the experiments in the cultivation of hemp, and of the varieties of potatoes forwarded for distribution among the members of this Society by the Board of Agriculture, both of which topics were referred to in the last Annual Report.

With regard to the growth of hemp, the Directors cannot as yet speak with any certainty, little more having been accomplished during the year, than acquiring some practical experience, and obtaining a supply of reliable seed for next year, samples of which, together with the plant in its raw state, were exhibited at the general show, and attracted much attention. It is satisfactory to be assured that the gentlemen who have commenced experiments are determined to continue them until satisfied of the expediency of cultivating that particular plant.

The various samples of potatoes received from the Board were distributed among some of the members of the Society, who report the result as follows:

Mr. Gage J. Miller planted five varieties, none of which did very well, in consequence of the blight striking them, but seedling No. 2 did the best. He will try them again next year.

Mr. F. G. Nash reports as follows: Planted a quarter of a peck each, of five varieties—of seedling No. 1, the produce was three pecks, and it proved a rather poor potato; seedling No. 2 produced five pecks, quality good; "Lane's red" produced 4½ pecks, also of good quality; "Orkney red" produced 8 pecks, rather small, but a good boiler; Sussex white produced 5 pecks, but is a poor boiler.

Mr. F. M. Whitlaw reports—seedling No. 1, not worth cultivating; No. 2, a good bearer, and an excellent potato; Red Orkney, very prolific, but crop unsatisfactory both as to size and quality; Sussex white promised well, but lost the entire produce by rot, the disease affecting this more than any other variety grown in the same neighborhood.

Of sixteen varieties planted by your late President, his Honor Judge Campbell, no direct statement can be submitted. A memorandum has been obtained, showing that an accurate account had been kept, and the products stored away; possibly these may be had for further trial next spring.

An attempt has been made by a member of the Society to introduce "Winter Oats," this year from imported seed, the result of the experiment will be given next year, and it is hoped that it may prove satisfactory.

EAST MIDDLESEX.

COUNTY SOCIETY.—Two hundred and twenty one members; amount of subscriptions, $236; balance from previous year, $196.49; deposited by Township Societies, $388.25; Government grant, $479.98; rent of land, $50; sundries, $9.50; total received, $1360.22. Paid township branches, $675.55; premiums at Spring and Fall Shows, $379; expenses, $144.93; balance in Treasurer's hands, $160.74.

TOWNSHIP BRANCHES.

NORTH DORCHESTER.—Fifty-four members; amount of subscriptions, $61.50; balance from previous year, $6.86; share of public grant, $37.37; sundries, $3; total receipts, $108.73. Paid in premiums, $77.25; expenses, $12; balance in hand, $19.48.

LONDON.—One hundred and four members; amount of subscriptions, $138.40; balance from preceding year, $10.81; Government grant, $97.42; total receipts, $246.63, Paid in premiums at Shows and plowing match, $171.50; expenses, $38.25; balance in Treasurer's hands, $36.88.

WEST NISSOURI.—Sixty-three members; amount of subscriptions, $68; balance from 1858, $31.85; Government grant, $71.04; sundries, $3; total received, $173.89. Paid in premiums, $104.76; expenses, $20; balance in hand, $49.13.

WESTMINSTER.—One hundred and eight members; subscriptions, $114.75; grant, $81.21; total received, $195.96. Paid in premiums, $137; expenses, $31.25; balance in Treasurer's hands, $27.71.

WEST MIDDLESEX.

COUNTY SOCIETY.—Seventy-eight members; amount of subscriptions, $87.50; deposited by Townships, $395.20; Government grant, $479.98; total received, $962.68. Paid township branches, $682.90; paid in premiums; $164; expenses, $59.82; balance in Treasurer's hands, $55.96.

Extracts from Report.

The west riding of Middlesex is traversed by the forty-third parallel of north latitude, and is formed by nine Townships, viz:—Adelaide, Carradoc, Delaware, Ekfrid, Lobo, Mosa, Metcalfe and East and West Williams. It contains a population of about 40,000 souls. Four-fifths of the inhabitants of West Middlesex are engaged in the cultivation of the soil, which embraces almost every variety known in Canada, the prevailing description being clay of various degrees of stiffness.

West Middlesex contains, besides the ordinary varieties of timber common in Western Canada, black walnut, cherry, oak, pine, and rock elm; the latter variety is now available for the Quebec market, furnishing a new source of wealth. Staves, squared oak timber, walnut, cherry and pine lumber are valuable for exportation, and an increasing trade in these articles has been effected since the completion of the Grand Trunk and Great Western railways, both of which roads run through the riding, and have proved of great value and advantage to its inhabitants. In this their first report, your Board considers it necessary to give a brief description of the several townships within the Society's limits.

ADELAIDE

Contains 45,137 acres; its settlement commenced in 1832; it has now over 500 names on the Assessment Roll, and a population of nearly 5,000 souls. The prevailing soil is stiff clay; only about 3,000 acres are sandy. The river Sydenham (or Bear creek) runs through the south eastern part of this township, and the whole is well watered and heavily timbered with beech, maple, oak, ash, birch, elm, bass and iron wood, some cherry, and a small quantity of pine. About one-third of the land in Adelaide is cleared and under cultivation, and a graded road runs through its centre, six miles of which is gravelled; the concession and side roads are good and improved in proportion to the date of settlement of the township. Almost every crop except hay was a partial failure in 1858, and in the spring of 1859 the County of Middlesex loaned the inhabitants of Adelaide through its Township Municipality, $2,500,

to purchase seed grain, which step has proved beneficial, adding much to the yield of the township, which without such aid could not have produced as much crop as was harvested in 1859.

This township usually produces good fall wheat, rye, spring wheat, barley, peas, oats, flax, buckwheat and root crops, but is not well adapted to corn or potatoes, excepting in the sandy portions. The crop of spring wheat in Adelaide the past year was an average of twenty bushels of "Fife" and sixteen bushels of "Morden" wheat per acre, these are the two kinds of spring wheat usually sown. The crops of peas, oats, barley, flax and turnips were remarkably good in 1859, and much above the average of former years; the fall wheat, fall rye, corn and fruit crop were severely damaged, and in many instances entirely destroyed, by the frosts of the 5th and 11th of June. A frost in the last week in August injured the corn and late sown buckwheat. This township has grist and saw mills, and a carding and fulling establishment. Its surplus produce finds a ready market at Strathroy, an incorporated village which formerly formed a part of the township; the prices of produce in 1859, and thus far in 1860, have been remunerative to the producer.

CARRADOC

Is a large township containing 62,503 acres, the most of which is sandy, requiring clover, plaster, and a good system of husbandry to obtain remunerative returns. Some portions of Carradoc situate south of the "long wood" road, and in the valley of the river Thames (which river forms a part of the boundary of this township, are composed of clay and gravelly soils which are as productive as any portion of Middlesex.

The township has good roads, grist and saw mills, and a great variety of valuable timber. The Sarnia branch and main line of the Great Western Railway runs through Caradoc, creating good markets at Mount Brydges, (a central point and station on the main line of the Great Western Railway,) and also at Strathroy, on the northern limit of the township. There is a portion (say 5,000 acres) of Carradoc swampy, and too wet for cultivation: a portion of its best lands at Muncey Town is reserved for and in the occupation of Indians, many of whom are successful farmers, raising average crops of wheat, corn, oats, peas, and root crops. This Township suffered with Adelaide by the June and August frosts. With the exception of fall wheat, rye, corn, hay and fruits, the crops of Carradoc in 1859 were above the average of former years.

DELAWARE

Is the smallest township in the Riding, containing 22,403 acres, most of which is good land and well suited to all kinds of agriculture. It has good gravelled roads, good water power, good meadow land, oak, walnut, pine and other valuable timber, and a flourishing branch Agricultural Society. Its crops in 1859 were equal to those produced on the same quantity of cleared land in any other township of West Middlesex. An extensive and valuable flourishing mill, for both merchant and country work, has been erected of stone and brick in Delaware, during the past year by the present Mayor of Toronto, and is an ornament and an acquisition to this township. A system of underdraining has been commenced which has proved beneficial and promises a good return for the outlay.

EKFRID.

Is a flat and level township containing 51,952 acres, one fourth of which is wet and swampy and requires draining before it can be brought into tillage; its prevailing soil is a stiff clay, with some very good land for farming purposes. This township has been much improved since the construction of the Great Western Railway, which runs through and drains a portion of it, and provides a good market for its timber and agricultural productions, but it is deficient in good roads. A branch Agricultural Society is now in course of formation. Ekfrid is well adapted for grazing and had good crops in 1859.

LOBO

Is one of the best agricultural townships in the Riding, and contains 46,843 acres, with a population of about 7,000 souls. There is very little waste land in Lobo; one half of the township is cleared and under a good state of cultivation; its prevailing soils are clay and limestone gravel of great fertility. The land is gently rolling and in most parts easily drained. Lobo is well settled, has gravel and other good roads, grist and saw mills, carding and fulling machines, and foundry, is well watered by various spring streams and by the river Sydenham which flows

through it. This township contains many thrifty and wealthy farmers who were formerly residents of the Niagara district. Lobo has some valuable live stock; its crop of 1859, except hay, corn, fruit, fall wheat and rye, (which were injured by frost) was above the average.

MOSA

Is a well-settled township containing 46,486 acres, with a population of 7,000 souls; it has about as much sandy loam as clay soil and is generally well adapted to agricultural purposes. There is a branch agricultural society. The June and August frost did less damage in Mosa than other townships of the riding; the crops of 1859 were good.

METCALFE

Is a small Townshiph containing 37,156 acres with an enterprising population, and the most flourshing agricultural society in the Riding. The prevailing quality of soil is clay, heavily timbered, producing Black Walnut trees from six to seven feet in didiameter; a sale of thirty-five Black Walnut trees was effected in this township in January 1860 for $200, the trees were from two feet to eight feet in diameter.

This township is rapidly improving, has produced great spring crops in 1859 which were more than an average—several farmers in Metcalfe have turned their attention to the culture of Root crops, especially the swedish turnip with which they fatten sheep and horned cattle for market; this system of husbandry has thus far proved a decided success, and much more profitable than grain culture, as will appear by examples hereto annexed.

WILLIAMS.

This was the largest township in west Middlesex, and contained 74,340 acres, but by a recent act of the Legislature it has been divided into two municipalities, East and west Williams. The soil of these townships is very good, chiefly clay, heavily timbered with every variety of timber common in Canada. The River aux Sable runs through these townships furnishing an abundance of water power and building stone, with pine, walnut, oak, cherry, and valuable timber grown along its banks. The Grand Trunk Railway from St. Mary's to Port Sarnia runs through the northern part of these townships, which have therefore made more progress in settlement and land clearing recently, than any other township within the limits of this society. The agricultural society for Williams now falls within the limits of East Williams. These townships are well supplied with grist and saw mills, as well as carding and fulling mills.

The general character of the soil of the Electoral division of West Middlesex, over the territory of which this society extends, is clay, but there are besides, various soils differing in their adaptation to the various crops. The average value of land, as ascertained by actual sales in 1859, is much below that of 1856, when improved farms sold readily for thirty dollars per acre, which farms can now be bought for twenty dollars per acre, and in some instances (where the owners are in debt and sued) at a lower price for cash, say fifteen dollars per acre for well improved farms in good localities.

The prevailing system of culture in West Middlesex is, for fall wheat a naked fallow plowed three times before sown; and for Spring wheat fall plowing is mostly adopted. The best crops of Spring wheat and Barley are raised after a hoed crop of the previous year. Too much attention has been paid to raising wheat, to the neglect of other grains and a proper system of rotation of crops, without which the yield of wheat will diminish. When the wheat crop of 1858 failed to a great extent from the ravages of the rust and weevil, severe pressure and great distress were caused among the inhabitants of the Riding, and in 1859 but a small quantity of fall wheat was sown compared with 1858. The frosts of 5th and 11th of June almost totally destroyed the fall wheat, fall rye, hay, and fruit crop of West Middlesex; but if, as we hope, these frosts have also destroyed the weevil, your Board cannot say whether they will have proved advantageous or detrimental to the permanent interest of the farmer. The average yield of the various crops for the past season in the societies limits has been, as near as the Board can ascertain, as follows:—

Fall Wheat, 3; Fall Rye, 1; Morden Spring Wheat, 16; Fife Spring Wheat, 20; Oats, 35; Peas, 30; Barley, 30; Buck wheat, 15; Flax, 20; Potatoes, 150; Mangel Wurzel, 200; Turnips, 500 bushels; Hay, 500 lbs.; Carrots, 1000 bushels per acre.

Labor has been plentiful; wages of farm hands ten dollars per month and board; mechanics, one dollar per day without board.

The June frosts were more severe in 1859 than any former year since the settlement of West Middlesex.

Cattle.—A marked improvement has taken place in the breeding of cattle, sheep and pigs, being the result of the policy pursued by most of the Township Branch Agricultural Societies; which has been—to import full blood male animals of the best breeds, such as Durhams, Devons, and Ayrshire bulls and Leicester, South Down and Merino Rams,—Berkshire, Yorkshire, and Byfield Boars. Many of the grade animals are now equal, if not superior, to the thorough breeds from which they were produced.

There are no extensive sheep or dairy farms in West Middlesex, nevertheless every farmer pays some attention to these branches of husbandry. A large quantity of Butter has been exported from this county the past season, which was of good quality, and sold at from twelve to sixteen cents per pound; the samples of Butter exhibited at the society's Show were numerous, and of superior quality; there has been but little cheese made in this Riding.

The number of sheep in West Middlesex is limited by the large amount of uncleared land, but the quality is good and the clip an average of four pounds per head. The price of sheep is now double what it was a few years ago; the greater part of the clip of 1859 was sold to dealers at twenty-four to twenty-eight cents per pound. The manufactories can work up the wool cheaper and better than the farmer, who now sells the larger portion of wool or exchanges it for cloth or blankets.

Land Draining.—The prevailing system is by means of open drains. A system of underdraining has been practised by the President of this society and a farmer in Deleware township which has proved cheap and effectual; this is by placing logs or poles parallel to each other about four inches apart with another log on top, the whole covered with a layer of straw and placed from two to three feet below the surface. Several fields have been thoroughly drained in this manner at an expense of ten to twelve dollars per acre; this will last from ten to twenty years, while proper tile drains would cost twenty dollars per acre. The Member for West Middlesex, A. P. McDonald, Esq., is underdraining extensively at Glencoe.

Root Crops—Have been extensively cultivated in West Middlesex in 1859, and several farmers, who have grown from 6,000 to 12,000 bushels of Turnips, are now feeding horned cattle and sheep for market; this system of farming is not only very profitable but it leaves the land in good order for any kind of grain crop. The turnip crop of the past year has averaged fully five hundred bushels per acre. Before dismissing the subject of Root crops your Board would urge the importance of this branch of farm tillage, because besides the profit to be derived from the cultivation of Roots, it is less exhausting to the soil than grain crops. The turnip during its growth is constantly shedding its leaves, and the usual mode of gathering this crop is to cut off the top and tap root and leave the same on the field, thereby enriching the soil. Sheep farming and cattle feeding (which should accompany Root culture) are deemed by your Board wise and profitable additions to our present system of farming, and will obviate the evils of an entire dependence upon grain crops.

Farm Implements.—Good tools are necessary in order to perform good work, and always economise time. Implements for farming have been much improved since the settlement of this part of Canada. The township ploughing matches have a tendency to develop the quality of the various ploughs now in use and a preference is given to the Bingham, Morley, and Canadian Clipper ploughs, which cost about fourteen dollars, and do as good work, with as light a draught, as the more expensive iron ploughs. In land free from stumps the double harrow, with thirty teeth, is in general use, and in new and stumpy land the heavy triangular drag is the most effective and safe. Reapers and Mowers are gradually coming into use where the state of the farms will permit. Threshing is done by machines which clean as well as thresh the grain. Seed drills are not in general use, but are required, and drills that would drill in manure as well as seed would prove advantageous.

There are several nurseries within the riding, and from these as good fruit trees can be procured as those imported from other counties or from the United States, and at a less cost.

There is as yet no horticultural society or Mechanics' Institute in West Middlesex. Those farmers who support agricultural So-

cieties, and attend and exhibit at the annual show fairs, are among the most prosperous, intelligent and thrifty of our number, yet it is to be deplored that in a Riding purely agricultural so few take an interest in and support these societies. The following example proves what can be accomplished by an intelligent and industrious farmer:—The farm contains 100 acres, 65 of which are now cleared, and 60 under cultivation; this farm was purchased by the present proprietor in 1848 for four hundred and twenty-five dollars, or four and a quarter dollars per acre, with a clearing thereon of six acres. One third of the purchase money was paid at the time of purchase, the balance to be paid in three years. The purchaser commenced operations in 1849 —the balance has been paid, the farm cleared, fenced, stocked; and a good brick house and frame barn have been erected from the produce of the farm, besides supporting the family of the owner. The labour employed for the first three years was that of the owner and his wife; a boy was employed after that up to 1859, in which year the farm was worked by the owner and a hired man. The produce in 1859 was as follows:—

From 8 acres, 6,000 bushels turnips.

From 8 acres of peas, 36 large waggon loads; from these 20 hogs have been fatted, which made 3,600 lbs. pork, besides ten store hogs fed, and a sufficient quantity remained to feed the same until first of April, 1860.

From 10 acres Morden spring wheat, 150 bsls.

From 5 acres oats, at 40 bushels per acre, 200 bushels.

From 4 acres barley, at 35 bushels per acre, 140 bushels. From ½ acre potatoes, 150 bsls.

From 12 acres meadow, 25 loads hay, 15 tons.

The meadow was timothy and clover. The frost killed much of the timothy, making the principal yield clover.

This farmer has raised turnips and fed sheep and cattle for market for the past three years with good success, making thereby more profit than farmers who depend on grain crops.

The value of the produce of this farm in 1859 was—

6,000	bushels	turnips at	8 cts.....	$480
240	"	peas "	50 cts.....	120
150	"	wheat "	90 cts.....	135
200	"	oats "	25 cts.....	50
140	"	barley "	60 cts.....	84
150	"	potatos "	25 cts.....	37
15	tons	hay.....		150
				$1,056

And the outlay was—

9 month's wages of hired man.....	$90
9 months board of ditto.....	63
Seed.....	90
Threshing	30
	$273
Leaving a balance of.....	783

for the owner's labour, and the work and feed of a pair of horses and one yoke of oxen, without taking into account the wool, mutton, butter, eggs, or increase in stock.

Another view of the value of this farm would be this—

Present value of farm.....	$2,500
Its present stock, consisting of—	
1 yoke oxen.....	$75
Waggon and sleigh.....	70
1 pair horses.....	140
Farm tools.....	30
23 sheep.....	69
14 cattle.....	140
10 hogs.....	30
7 cattle up to fat, at $30 each.....	210
	$3,264
Less cost of farm.....	425
	$2,839

Leaving an annual increase of $283, over and above the support of the owner's family, for the past ten years.

The three adjoining farmers are all engaged in the culture of roots and feeding cattle, and with equal success; two of them purchased cattle in October last, which they sold in January and February for nearly double the first cost, after feeding them for less than three months upon straw and turnips. Sixteen head of cattle were sold for $1,000 by one of these farmers—the other bought seven head of cattle in October for two hundred and eighty five dollars, and sold them in January for six hundred dollars.

The cost of producing the undermentioned crops in 1859 has been nearly as follows:

Fall wheat, per acre, $12 50; grain and straw worth only the harvesting; loss per acre, $12 50.

Spring wheat, $10; produce, 20 bushels, at 90 cts., $18; net profit, $8.

Peas, $6 75; yield, 30 bushels, at 40 cts., $12; net profit, $5 25.

Oats, $6; yield, 40 bushels, at 25 cts., $10; net profit, $4.

Turnips, $18; yield, 500 bushels, at 8 cts., $40; net profit, $22.

Carrots, $38; yield, 1,000 bushels at 20 cts., $200; net profit, $162.

The produce and prices of the year 1859 would seem to vary nearly according to the foregoing figures; from these it will be seen that root culture is the most profitable kind of husbandry; but farmers that cultivate a variety of crops and put them in in good order and in proper time, usually get from the whole a fair remuneration for labor and seed. Notwithstanding the almost entire failure in 1859 of fruit, hay, corn, fall wheat, rye, and late sown buckwheat, the abundance of other crops has made the crop of that year average in value that of 1857, and far exceed that of 1858 in West Middlesex.

The prosperity of Canada depends almost wholly upon the success of her agriculture. Our commercial and manufacturing interests are influenced by and dependent upon our agricultural success, and the essentials to agricultural prosperity are economy and unfettered and well-directed industry.

The native born adults form the most valuable portion of the population of any country, and it should be our policy to prevent these from wandering off where good land is more plenty and cheap, or where hard labour is better rewarded. By economy and industry we may overcome temporary calamities, but when the young and vigorous, the enterprising, intelligent and initiated portion of our population abandon the country in which they were reared and which they are the best qualified to develop, to seek homes in the Western States, the loss is irreparable. It is too true, that too many of this class of our population are annually emigrating to the west, thus depriving Canada of that labour and industry which creates capital. Your Board are of opinion that a wholesome Homestead Law, giving an exemption from seizure for debt, of the team and implements of a farmer, necessary to prosecute his vocation as a husbandman, would to a good extent encourage settlement and prevent emigration. There is no valid reason why the necessary implements of a farmer should not be protected as well as the tools of the mechanic. At the commencement, and during the first settlement of any district, while land is being cleared, credit is indispensable among farmers. Another evil affecting farmers is the expensive and unnecessary law costs they are compelled to pay when a failure of crops or other misfortune occurs.

Although a Homestead Law and law costs are political questions, yet they are so identified with the present condition of our agricultural interests, that your Board see no good reason why agricultural societies should be silent on this subject, as the remedy is in the hands of the farmers when they record their votes.

Your Board are of opinion that the collection laws might be so simplified and cheapened as to benefit all classes of the community except lawyers, while a good Homestead Law would confer a lasting benefit on the agriculturists without injury to traders or others.

Miscellaneous.

The Microscope.—With the help of his micriscope, man caa enter into a world unknown to the ignorant, and altogether invisible to the unassisted eye. In every plant and flower which adorns the field, in every leaf of the forest, in the seeds, prickles, and down of all vegetables, he perceives beauties and harmonies, and exquisite contrivances, of which, without this instrument, he would have no conception. In every scale of a haddock, he perceives a beautiful piece of net-work, admirably contrived and arranged and in the scale of the sole, a still more diversified structure, which no art could imitate, terminated with pointed spikes, and formed with admirable regularity. Where nothing but a speck of *moldiness* appears to the naked eye, he beholds a *forest of mushrooms* with long stalks, and with leaves and blossoms distinctly visible. In the eyes of a common fly, where others can see only two small protuberances, he perceives several thousands of beautiful transparent globes, rounded and polished, placed with the utmost regularity in rows, crossing each other in a kind of lattice work, and forming the most admirable peice of mechanism the eye can contemplate. The small dust that covers the wings of moths and butterflies, he perceives to consist of an infinite multitude of feathers of various forms not much unlike the feathers of birds, and adorned with the most bright and vivid colors. In an animal so small that the naked eye can scarcely distinguish it as a visible point, he perceives a head, mouth, eyes, legs, joints, bristles, hair, and other animal parts and functions, as nicely formed and adjusted, and endowed with as much vivacity, agility, and intelligence as the larger animals. In the tail of a small fish or the foot of a frog, he can perceive the variegated

branchings of the veins and arteries, and the blood circulating through them with amazing velocity. In a drop of stagnant water he perceives thousands of living beings of various shapes and sizes beautifully formed, and swimming with wanton vivacity, like fishes in the midst of the ocean. In short by this instrument he perceives that the whole earth is full of animation, and that there is not a single tree, plant, or flower, and scarcely a drop of water, that is not teeming with life and peopled with its peculiar inhabitants.' He thus enters, as it were, into a new world, invisible to the naked eyes, where every object in the animal, vegetable, and mineral kingdoms, presents a new and interesting aspect, and unfolds beauties, harmonies, contrasts, and exquisite contrivances, altogether inconceivable by the ignorant and unreflecting mind.—*Dick.*

Recent experiments in Germany show that when the thickness of ice is an inch and a half, it will just bear the weight of a single man; when about three inches and a half, it will bear detachments of infantry with their ranks rather wide apart; with a thickness of four and four-tenth inches, eight pounders can be conveyed over it on sledges; five and two-tenth inches will bear 12 pounders; eight inches will bear 24 pounders; and a thickness of twelve inches will bear almost any weight.

The Chamois Hunter and the Flower.—A chamois hunter's life is regarded as the most enviable that can fall to the lot of man; and the daring climber, the skillful stalker, and the sure shot receives due appreciation on all sides. Among the most daring deeds of his life is the obtaining of the "Edelweis," (*Gnaphalium Leontopodium*) a flower met with only on the highest mountains in certain parts of Tyrol and Batavia. It is much valued for the snowy purity of its color, as well as on account of the difficulty of getting it. The very name "noble purity," has a charm about it, and, strangely enough, it always grows in a spot only to be reached with the utmost peril. You will see a tuft of its beautifully white flowers overhanging a precipice, or waving on a perpendicular wall of rock to be approached but by a ledge, where a chamois could hardly stand.—But it is this very difficulty of acquisition which gives the flower so peculiar a value, and impels many a jager to brave the danger, that he may get a posy of edelweis for the hat or breast of his ladye love, and often has such an one fallen over the rocks just as he had reached it, and been found dead with the flower of such fatal beauty still held firmly in his hand.

The Dinner-Hour in Olden Times.—Two o'clock was, in this country, the ancient hour of dining, and continued so in the University of Cambridge even to the reign of Edward VI., as appears from a very remarkable passage in a sermon of Thomas Lever, at Paul's Cross, on the 14th of December, 1550. About the middle of Queen Elizabeth's reign the dining hour was somewhat later. 'With us,' says the author of the *Description of England*, in the preface of of Holinshed, 'the nobilitie, gentry, and students do ordinarily go to dinner at eleven before noone, and to supper at five, or between five and six in the afternoone. The merchants dine and sup seldome before twelve at noone and six at night, especially at London. The husbandmen dine also at high-noone, as they call it, and sup at seven or eight; but out of the terme, in our universities the scholars dine at ten.' Such was the custom till the middle of the seventeenth century, and even in the middle of the last the colleges all dined at twelve.—*Mark Lane Express.*

The Leech as a Weather-Glass.—The following observations on a leech were made by a gentleman who kept one several years for the above purpose:—"A phial of water containing a leech was kept in the lower frame of a chamber window sash, so that when I looked in the morning I could know what would be the weather on the following day. If the weather proves serene and beautiful, the leech lies motionless at the bottom of the glass, and rolled together in a spiral form. If it rains before or after noon, it is found to have crept up to the top of its lodging, and remains till the weather is settled. If we are to have wind, the poor prisoner gallops through its limpid habitation with amazing swiftness, and seldom rests till it begins to blow hard. If a remarkable storm of thunder and rain is to succeed, for some days before, it lodges almost continually out of the water, and discovers uneasiness in violent throes and convulsive motions. In the frost, as in clear weather, it lies at the bottom; and in snow, as in rainy weather, it pitches its dwelling upon the very mouth of the phial. The leech was kept in an 8oz. phial, about three-fourths filled with water. In the summer the water was changed once a week, and in the winter once a fortnight."

Hydrophobia in the Dog.—How the nature of the dog can be so utterly changed as to charge its bite with deadly venom, or how it is that the moist saliva of the rabid animal should communicate the disease with other beings, is at present but a mystery. There seems to be an actual infusion of the dog nature into the animal which is bitten by a rabid dog, or by one of the creatures which has been inoculated by the bite of one of these terrible beings. It is evident that the virus is resident in the saliva, because the malady has been communicated by the mere touch of the dog's tongue upon a wound without the infliction of a bite from its teeth. Yet is equally evident that the poisonous property belongs not to the saliva, but to the influence

which is conducted by its means. In some strange fashion the spirit of the angry dog seems to be infused into the victim of its bite; and it is well known that even when an angry dog has in the heat of passion inflicted a wound, the result has been very similar to hydrophobia, though the animal was not affected with that disease. Ordinarily, the bite of a dog, such as the playful bite of a puppy, though sufficiently painful, carries no danger with it; but if the animal has only been touched with this malady, its bite is but too frequently fatal. This death-dealing influence has been proved to remain in the saliva for four-and-twenty hours after the animal's death. Perhaps there may be something of electricity in the fatal influence, which requires a fluid conductor, for if the teeth of the animal have been wiped dry by passing through the clothing of its intended victim, no evil result follows.—*Routledge's Illustrated Natural History; by the Rev. J. G. Wood.*

Extraordinary Effect of the Sting of the Honey-Bee.—About two years ago the farm-servant of Mr. Waldron, of Up Lambourne, in Berkshire, while working in his master's garden, was stung by a bee in the back of the head. The sting was immediately followed by all the symptoms attendant on snake poison; the pulsation of the heart nearly ceased, and the man's life was only saved by the copious administration of brandy. In August last, two years after this occurrence, the man received his master's orders to dig some potatoes in the same garden, adjacent to the same bee-hive whence the insect came, and to his fellow-servants he expressed his fears that he should be stung again. In obedience to his orders, however, he commenced the appointed task; but ere he had finished the labour, a bee again stung him on the back of the head. The result was similar; the system immediately, and even to a greater degree, succumbed to the insect poison, and in less than twenty minutes the man was dead. My friend, Mr. Hiller, who is the medical practitioner in that vicinity, afforded me the above information; and the death of the patient was so immediate that, though sent for to attend him, he was unable to reach the spot in time.—Grantley F. Berkeley, *in The Field.*

The Ordeal of Water.—The ordeal of fire and water was frequently resorted to by the Ameers, in the absence of direct proof. In the latter ordeal the accused was lowered into a well, placing his head under water. At the very moment a strong man shot an arrow as far as it would go, and another ran to pick it up. If the accused could remain under water till the arrow was brought back, which was signalized by the shaking of a rope, he was declared innocent; but if he raised his head a moment before that, he was pronounced guilty.—*Narrative of a Residence at the Court of Meer Ali Moorad; by Edward Archer Longley.*

Steel Springs.—For the last six months, Messrs. James Jeffries & Sons, the well-known spring manufacturers, of Philadelphia, have adopted a new mode of securing the leaves of their springs together. No hole is made through the leaves, nor is any bolt used. Two notches are made in each edge of the two top and two bottom leaves, these notches being made where they will be covered by the band which, when shrunk on, is indented, by means of a punch, into each notch. The band is thus indented at four points on each side, or at eight places in all, and has so firm a hold upon the leaves that loosening would be impossible. The top and bottom leaves being thus held firmly by the band, the intermediate leaves are held firmly in place by the studs, punched in the ordinary manner, at their ends. The metal taken out of the top and bottom leaves in making the notches is not one half that which would be removed for a bolt hole, while the intermediate leaves are left of the full width and strength. Springs thus secured together can never work loose, and there is no extra part which, like a bolt, can break or moe off.—*Scientific American.*

Cold from Damp Clothes.—If the clothes which cover the body are damp, the moisture which they contain has a tendency to evaporate by the heat communicated to it by the body.—The heat absorbed in the evaporation of the moisture contained in the clothes must be, in part, supplied by the body, and will have a tendency to reduce the temperature of the body in an undue degree, and thereby to produce cold. The effect of violent labor or exercise is to cause the body to generate heat much faster than it would do in a state of rest. Hence we see why, when the clothes have been rendered wet by rain or perspiration, the taking of cold may be prevented by keeping the body in a state of exercise or labour till the clothes can be changed or till they dry on the person; for in this case the heat carried off by the moisture in evaporating is amply supplied by the redundant heat generated by labor or exercise.

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Brantford, April 8th, 1861. 4-t.

Bread and Bread Making.—The subject of our present article on household science is one of the most important that can come under our notice, and will therefore require a careful consideration at our hands. Before entering on the subject of bread making, it is essential to investigate the chemical characters of the various substances that compose wheaten flour ; a rough analysis of flour may be made by the aid of a basin of water and a peice of muslin. If a small quantity of flour is tied up in a muslin rag and and then well washed and kneaded in water, a milky liquid is obtatned, and a remarkably tough, elastic substance remains in the rag ; this latter is termed gluten, from its peculiarly glutinous character when moist, though, when dried, it becomes of the consistence of horn.—Gluten is the flesh-forming or nutritive ingredient in the flour, partaking much of the nature of animal than of vegetable food. The milky liquid on being allowed to stand, deposits a fine white insoluble powder, which is starch, and remains disrolved a certain amount of gum, sugar, albumen, and other soluble ingredients. When wheaten flour is mixed with water and yeast, so as to form dough, and then allowed to stand at rest for some time, it undergoes the process of fermentation, the sugar which it contains in small quantities is converted, as in the ordinary cases of fermenting liquids, into spirit and carbonic acid gas ; the latter, owing to the tough, glutinous character of the dough, cannot escape : hence the dough rises or swells, assuming a spongy character, which greatly contributes to the excellency of the bread. The plan usually followed in preparing ordinary home-made bread is to place the required quantity of flour in a pan, and to pour into the centre the requisite amonnt of yeast along with a proportion of warm water; sufficiont flour is then stirred into the mixture to make a thin batter, which is dusted over with dry flour, the whole is allowed to stand in a warm place until the batter swells and cracks the flower strewed above it, the whole is then kneaded up with a sufficient amount of warm water, and thus formed into a tough dough, which is allowed to rise, and when sufficiently light is made into loaves and baked.

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, MAY 1, 1861. No. 9.

Agricultural Hints and Prospects.

The present season must be regarded as a late one; nevertheless the prospects of the farmer are anything but discouraging. The large quantity of snow which fell during the winter, was a means both of protection and manuring, and the ground was left, after the breaking up of the frost, in a favorable condition for the general purposes of cultivation. The weather has been remarkably dry and somewhat cold throughout Upper Canada, but of late considerable showers have fallen, which, with a warm temperature, will bring forward vegetation with great rapidity. We are glad to learn that winter wheat generally is strong and promising. In some localities,—as is always more or less the case,—the plant appears sickly, and in exposed situations, such as the knolls on rolling land, it has been winter-killed. But this evil, we are led to hope and conclude, is confined within comparatively small areas.

Farmers have been busy for the past two or three weeks, in the earlier parts of the Province, in preparing land for spring cropping; and in some sections a considerable amount of peas, oats, &c., have been sown, under favorable conditions. Wet, clay lands, however, are yet too cold and tender to do much with; but a few days of the present fine weather will bring them into a workable condition. Every year the benefits of draining wherever properly carried out, are becoming more apparent. We saw the other day a fine field of winter wheat, trong and healthy, which without this important, and in many localities indispensible means of improvement, would have assumed the discouraging appearance of an adjoining but *undrained* field, in which two-thirds of the plants had been thoroughly lifted out by the frost, and the remainder looked sickly and most unpromising. Draining also renders land much warmer and earlier for spring working, and consequently admits of an earlier and better seed-bed. On the farm above alluded to, we observed in a well-drained field, peas already above ground, sown in excellent condition, while the adjoining and undrained fields were too soft and damp to admit of the trampling of horses. Just in proportion as people practise draining on cold, wet soils, will they perceive its important advantages not in one only, but in many points of view. In these latitudes, whether in America or Europe, *it is the one great, indispensible means of agricultural advancement!*

We may be again permitted to remind our readers of the close connection between the of growing roots and improved stock. The present late season and scantiness of hay must plainly demonstrate this important truth.—Happy that farmer who in winter, and particularly in early spring, has the means of giving a daily supply, however small, of turnips, mangels, carrots, &c., to his live stock; the health and condition of which, whether they be horses, sheep, or horned cattle, will be greatly improved thereby. Stock may, indeed, be kept in sound, growing condition upon good hay alone, but few farmers produce sufficient of that article to

maintain a large quantity of cattle. Besides, experience has fully shown that a *mixture of food* is both better and cheaper than to depend on one or two articles only.

The present then is the time for taking active measures to secure a growth of roots. Land should have been previously prepared, and if ploughed deeply before winter, with fresh farm yard dung well incorporated, all the better. A fine, deep seed-bed is a great advantage; indeed it may be pronounced essential, for all the smaller kinds of seeds, especially Carrots, parsnips, and mangel wurzel should be got in, without delay. The sowing of Swedish turnips may be delayed to the end of the month, or the beginning of June. If sown too early, particularly on rich land, and in a moist, fast-growing season, they will be almost sure to get mildewed, and their quality seriously injured. The feeding property of all kinds of roots, particularly turnips, is much affected by the character of the soil, manure, and season, and the kind of treatment to which they are subjected. In root culture generally, the most thorough and perfect manner of doing the work, although it may involve a large outlay in labor and manure, will be found in the result the most profitable.

The most recent accounts from Britain of the state of the wheat plant, although somewhat more favorable, are nevertheless, upon the whole, anything but promising; and this remark will apply to France, Germany, and portions of Russia, and as far south as Spain. The weather continued wet and cold, and much ground intended for seeding with spring wheat that had been left over from the autumn, would, if sown at all, be very late. Our farmers therefore may pretty safely reckon on getting a remunerative price for wheat this year, and if Providence again grant us a large return, it will do much towards increasing the returning prosperity of the Province, and of placing that prosperity on a wide and enduring basis.

Scale of Points in Shorthorns.

At a meeting of the Newcastle Farmers' Club, (England) Mr. Chrisp, a well known Shorthorn breeder, gave a scale of points and their relative value of this world renowned race of cattle. As to the number of points and their comparative prominence, as set down by Mr. Chrisp, there is obviously some room for doubts and differences of opinion; and it should be borne in mind that he offered his scale, to some extent at least, as a suggestion. We subjoin for the benefit of our readers the scale, and a few condensed preliminary remarks, which it is hoped will call forth observation and reflection.

Mr. Chrisp said that he was about to attempt a sketch of an ideal Shorthorn, possessing all those perfect points which breeders prize so much. Although most butchers like a large carcass, which brings down the scale, yet they also prize the greatest quantity of beef on the best joints. When these are not to be had together, the latter is preferred as of most value in the market. Therefore great size is discarded, as leading to overgrown, ungainly animals, difficult to fatten. On the other hand, little, dwarfed, stunted animals are equally to be avoided in breeding,—these appearing to have lost that healthy constitutional stamina which in the best Shorthorns is so highly prized. These should be weeded out, as they occasionally occur in herds from cross or close breeding, as well as from food or climate, or even local causes. The Shorthorn bull should have a symmetrical form, of medium size; body, including quarters and neck, rather long than short; bones fine, legs short; all choice parts covered with cellular flesh and fat mixed, not patchy; skin, medium thickness and mellow to touch; hair fine, silky, thickset, long in winter, not wiry; head well set on to neck; scalp wide; face dished a little, rather long than short, fine muzzle, open nostrils, horns medium size, fine, clear, and waxy, free from black stains; the eyes prominent, bright, but placid; the neck a little elongated and arched, well set on the shoulders, which ought to slope backwards, be broad and level, deep, with the shoulder points; brisket deep, prominent and broad between the fore legs; ribs round, back straight, quarters long, full fleshed thighs, deep and full at twist, arms full above, fine at knee, flanks deep and full, tail well set on, at right angles with the back, and not thick or course;—colours, roan, red, white, or flecked—black, or shadings of black on skin, hair, horns, or hoof objectionable. Altogether, the animal ought to have a gay and "stylish" appearance in gait, as well as in form, which breeders con-

sider betokening high blood, and which most animals of the Shorthorn tribe have, more or less. The same characters will, with allowances for the more feminine apperance, answer for the cow, with full development of udder, not flaxy, well set teats, good milk veins, and a hereditary character for good milking qualities.

No. of Points.	*What constitutes Goodness.*
Head—4—	Moderate length, wide and rather dished, with clear horns, and flesh-coloured nose, not black.
Neck—1—	Being well sprung from shoulders, and slightly arched.
Neck Vein—2—	Prominent and full.
Shoulder and crops—6—	Former being well thrown back, and wide at top, "points" well covered, and not prominent.—Crops being very full.
Breast—2—	Coming well forward, wide and full.
Back—3—	Breadth and lovelness.
Loin—4—	Breadth, and being well covered, not low.
Hooks—2—	Breadth, and being at right angles with back bone.
Rump—2—	Not being drooped.
Quarter—2—	Length, levelness, and being well filled up.
Thigh—2—	Length and fineness, and being well beefed inwards.
Twists—3—	Coming well down.
Hocks—1—	Being well bent, and not turned in.
Flank—3—	Full and coming well forward.
Back-ribs—3—	Well sprung from back, and round.
Fore-ribs—3—	Round, and coming well down.
Quality and hair—4—	Skin not being too thin, but soft and mellow, hair long and silky.
Colour—1—	Roans and reds.
Udder and Milk Vessels—2—	Well formed teats and udder, large milk veins.

Potatoes and Carrots fed to Horses.

A Correspondent asks, whether Potatoes are of as much value as Carrots for feeding horses?

Roots differ considerably in their amount of nutritious matter, which is affected by the varieties cultivated, and the character of the soil, season, and manure applied. As a general thing, potatoes are richer, weight for weight, in nutritious ingredients than carrots. The most recent analysis give to the potatos, 2.81 per cent of Nitrogenous compounds, or flesh formers, and 18.30 of Respiratory compounds, as starch, &c. Whereas in the carrot these two classes of ingredients, are respectively 1.87 and 7.91. The carrot has an excess of water, which amounts to 86.04 per cent, while that of the potato is 77.69. Although potatoes may be advantageously given to horses in a raw or cooked state, they do not relish them so well as either swed turnips or carrots. Experience has established the fact that the latter is the root particularly suited as a horse-food, and it is accordingly used extensively for that purpose. Steward, a hgh authority in all matters pertaining to horse management,—says, that for "slow working horses, carrots may supply the place of corn (grain) quite well, at least for those employed on the farm. They might become fat enough on 70lbs of carrots a day, but would want stamina without some corn."—The White or Belgian Carrot is easily cultivated in this country and is a good yielder, and can be strongly recommended. Horse having a moderate, daily supply of them, especially as spring advances, and before grass comes, will appear sleek and healthy, and it is said will not be so likely to become affected in their wind.

Dairy Husbandry.

A very useful stand book on this subject has recently been issued in England by Mr. J. C. Morton, the well known editor of *Blackie's Encylopædia of Agriculture*, and the *Agricultural Gazette*, which is to form one of a series embracing the whole circle of rural affairs. It deals with dairy statistics, the food of the cow, and their choice and treatment of cows and their milk, butter and cheese making, and general management, and gives a monthly calendar of dairy operations.

From their statistics we learn that one pound of butter is produced for every 18 to 21 pints of milk, according to the condition, breed and state of the cows. This has been tried in a mixed dairy of Shorthorns and Guernsey cows, and about 20 pints of milk produced one pound of butter. From 7 to 8 pints of milk produced one pound of cheese. In Dorsetshire, where the milk is much used in making butter and skim-milk cheese, the average yield of a cow is 168 lbs. of butter, and 200 lbs of such cheese yearly. A good dairy farm will keep a cow for every three acres of pasture, "and under good management, with some arable land in addition, a much smaller extent will suffice." Most of the dairy pro-

duce of the old country is made from grass-fed-cows. "There is, however, room for a great deal of economy yet in the utilising of the dairy farm, by adapting its arable part more directly to cow feeding, and so enabling the keeping of a larger stock of cattle."—And Mr. Morton cites several examples of 26 or 27 head of cow-stock kept on 50 acres of land by means of roots and green crops, whereas such a farm wholly in pasture would not keep more than two thirds of that number.

It is further stated that in all the best dairy districts of England the Shorthorn is gradually displacing other breeds of cattle, and though this breed is usually considered beef—producing *par excellence*, yet many of the Shorthorn strains are remarkable for their yield of milk. The milk is not considered so rich in butter, in proportion to the quantity, as that of some other breeds, but for cheese none are so productive. In the large dairies of London and other great cities, the Shorthorn element pre dominates.

The Advantages and Happiness of a Farmer's Life.

Editor of the Agriculturist.—When we think of the never-ending changes of human life, and the fickleness of human nature, and the endless numbers of trades to which a man may resort to obtain a livelihood, or independence, or perchance a fortune,—the coveted object which all men wish to obtain and for which all else is abandoned—we may wonder why the pleasures of a rural and happy life, dear friends, and the comforts of a peaceful home, are laid aside for the more bustling and glittering prospects of mercantile and speculative transactions which are subject to every commercial and political change.

My object in writing, Mr. Editor, is to ex pose the folly (as at appears to me) of Farmers and farmer's sons selling and renting their farms and leaving a good prospect to join in the less toilsome but more doubtful chances of speculation.

I am a farmer myself, I have considered it impartially, and would not exchange a good prospect for one of any other trade or profession; for it is evident that the pleasures and beauties of a farmer's life in Canada are increasing every year. It is becoming as much a science as a labor, and as productive of happiness as of profit, for those on cleared farms are free from the toils of a pioneer's life.

The great improvements in agricultural implements and scientific appliances, must tend to make our daily labor pleasant and easy.

I would not advocate that all should be farmers, but I would speak of the young farmer generally, who has a farm of his own, but who cannot submit to the steady and regular routine of a tiller of the soil,—and who, perhaps, imagines that he has abilities for a more active and business life, and must consequently rent his farm and invest his capital in some speculation. He soon gets into difficulties, has to mortgage his land to obtain borrowed money; in eight or ten years after a hard struggle he fails, and is left more in debt than he can ever pay.

This may appear an imaginary picture, but if we would take the trouble to look at many who have done so, we would find it a true one. For I can look back upon the past ten years and trace the course of many of my schoolfellows and friends, farmer's sons who might now have been independent, but are absolutely worse than nothing.

The continual failures, losses and closing up of business that we see and hear tell of every day in some town or village, make the farmer whose hands are hardened with honest toil feel proud that he is such, and thankful that he is not subject to similar misfortune. Though it cannot be denied that speculators and men of business do sometimes amass large fortunes, yet the dangers and chances by which these are obtained are very great, whilst many a farmer who was content with the yearly result of his labors is now able to live in as much comfort and happiness, though not so much wealth, as the retired merchant. The troubles and variations of business are very great; he must be continu lly occupied in his business, though cares be heavy upon his mind; if he is not pushing, his labor will stand still, and if once stopped is difficult to start again,—whilst the farmer who is free from such cares and troubles, goes on in his regular labor, sowing and reaping, trusting to nature and to nature's God to give the increase. And after the toils of summers are over, and mellow autumn is followed by solemn winter, spreading his snowy mantle over the earth, then come joyful happy scenes in the rural home, in the quiet country, away from the disagreeable noise and bustle of the town. But I would not appear to say too much in favor of the poetry and beauty of a country life, for all cannot see it alike, and one may be prejudiced with what they do see.—Nor do I intend to write to a great length on the subject, for I feel myself unable properly to do so. But I hope that some who have a desire for a change may consider these truthful hints before they make it, and profit by them.

A Reader.

Newcastle, April 16, 1861.

Flax Culture.

We have been favored by W. Hutton, Esq., Secretary of the Bureau of Agriculture, Quebec, with the following letter from a correspondent in Ireland, and the subjoined extract from the *Belfast Northern Whig*, both of which will be read with interest :—

Grange House, Strabane, 9th April, 1861.

My Dear Sir.—I send you the *Northern Whig* of Saturday the 6th, in which you will see a not very accurate report of my statement of the capability of Canada West, as a Flax producing country.

The Canadian Government Emigration Agent, Mr. Donaldson, is doing every thing in his power to promote the cause, but we have no *more laborers* to spare in this country, except a few Cotton Weavers, who are just now scantily employed, and suffering a good deal of privation; these being not fitted for the rough work of chopping, and cultivating in Canada, it is folly to speak of; but I have no doubt the class of small farmers so very numerous in Ulster, would benefit their own condition, and the country of their adoption, if they could be induced to emigrate to Canada.

It was under this impression that I went to Belfast last week and brought the matter forward in the Chemico Agricultural Society, with the double view of calling the attention of the Flax Spinners to Canada as a source from whence to derive a supply of the article of which they are in such want; and exciting enquiry among the small farmers of this country, who so well understand the cultivation and preparation, and the *profit* arising from it.

Flax is an article of such value that it could well bear the cost of Freight, Commission and Insurance, in sending it to this or any foreign market, but if the charge on 4 barrels of Spring Wheat which I paid a few days ago from Guelph, be not an overcharge, viz. £3 3s. 2d Bt., it must lessen the profit of cultivation amazingly; value here £7 0 0 charges £3 3s 2d, net, £3 16s 10d. Now the same weight of Flax, 10 cwt., average price £30, charges £3 3s 2d off, net, £26 16s 10d. I mention this to show the advantage of cultivating an article, valuable enough to bear the charges of sending it to a foreign market.

The report, as given in the *Whig*, does not exactly express my views; It being desirable to ascertain how far the Flax (if *steeped*, and prepared as we do) would come up to the requirements of the Linen trade here, I recommended the merchants now associated for the growth of Flax in *India*, to send out a person well acquinted with all the processes of *cultivation* and *preparation*, and of the *quality* of *water* suited for steeping; and that he should purchase the crop while growing in such localities as he could find these requirements; say from Messrs. Perine, who, I have no doubt would both sell and undertake the scutching, as it would afford them (Messrs. Perine) an opportunity of comparing this plan with their system of dew rotting.

This is all I would recommend them to attempt for this season. If it proved as successful as I anticipate, there would be no difficulty in extending the cultivation; and if a statement made by a gentleman at the meeting be well founded, viz., that where Flax cultivation had been introduced, the *Wheat Midge* had either disappeared, or its ravages had ceased, it would prove a double blessing to the country.

Looking at the Canadian Government's determination to promote the settlement of wild lands by emigration, I think an appeal should be made to small farmers at home, rather than the mere laborers; the latter having full employ are in a better condition than they ever were, and indeed fully as well as they would be in Canada, with the protracted winter; but the farmers, as a class are much better suited for settling in a new country, they have more self-reliance, more persevering industry, and most of them have some means to enable them to live while they are clearing and cultivatiug for future years. They might be settled, too, in such a way that those who came from the same district would be a mutual help and protection to each other, as the settlement of Ulster was under the Irish Society, and the London Companies.

April 11th. This is the mail day and I have just received a letter from London, from a Mr. Gamble, who states that he has seen in a Belfast paper my statement relative to the culture of Fax in Canada, and that it is his intention to proceed to that country, with a view to open a trade with England and Ireland, asking me to let him know the particular localities I visited, and the best place I think a market for the new material could be established.

He says he is well acquainted with the method adopted in Belgium, France, and Holland, and asks me if I think a concern started to prepare the fibre after the manner followed in these countries would be likely to prove remunerative?

I have written Mr. Gamble fully all I know, and have taken the liberty of giving him your address, with that of my brother John, assured that you will both consider it a duty to the country of your adoption to give all the information, and render every facility in your power to persons wishing to introduce any thing likely to add to its prosperity.

I do not know what steps, if any, the committee at Belfast may take; but the subject has now been started fairly, and is exciting considerable interest, being taken up by many of the Provincial papers.

Should the committee send out an agent, or get any person to undertake the culture and

preparation of Flax on his own account, the Government should lend them every assistance, and the Agricultural Societies should give liberal premiums to encourage it, till fairly established.

I am, &c.,

ROBERT MCCREA.

To W. HUTTON, ESQ.,
Sec. Bureau of Agriculture,
Quebec, Canada.

CHEMICO AGRICULTURAL SOCIETY.

From the Belfast Northern Whig, April 6th, 1861.

Yesterday, the ordinary monthly meeting of the Chemico-Agricultural Society was held at the Laboratory, Arthur Street—John Roberts, Esq., Colin, presiding. The other members present were John Andrews, Esq., Comber; Dr. Andrews, Vice-President of Queen's College; Dr. Richie, William Ewart, Jun., Esq.; Rev. Mr. Smyth, Cranmoney; Washington Charters, Esq.; Mathew Bell, Esq., Armagh; John A. Donaldson, Esq., Government Emigration Agent, Canada; R. Gordon, Esq.; John Ireland, Esq.; Professor Hodges, &c.

CULTIVATION OF FLAX IN CANADA.

After the transaction of the routine business.

Mr. Robert M'Crea, of Grange House, Strabane who had travelled in Canada, made a statement to the council with regard to the agricultural capabilities of Canada West, especially on the adaptation of the province for the growth of flax. Mr. M'Crea said that, having heard before he went to America, about two years ago, of the requirements of the flax-spinner of Belfast and other parts of the North of Ireland, he felt it his duty when in Canada West to direct his attention to the subject of flax as cultivated there. He observed in one particular district there were a great number of fields of good-looking flax, and he found on inquiry that they were engaged from the farmers by the Messrs. Perine, who were Germans, and who had erected a scutch mill in the locality for the purpose of scutching the flax. The year before last they had upwards of 600 acres of flax under cultivation, and last year they had upwards of 1,000 acres. Now, it occurred to him, in looking at that flax, that, if it were grown in a place where it could be properly steeped and scutched, it might be a great matter to the flaxspinners of the North of Ireland, to whom he attributed the prosperity of Ulster.

He felt an interest in the subject, not as a flaxspinner himself, for he was none, but as a flax-grower. When in Upper Canada, he went with his brother, who was living in that country, to visit Messrs. Perine's establishment, where he found that the flax used by them, instead of being steeped, as was the practice in this country, was dew-rotted—that was, rotted by the heavy dews at night, and afterwards dried by the sun. The flax was allowed to ripen very much, and the over-ripening and want of steeping accounted sufficiently for the difference in the quality; but he believed there could be as good flax grown in Canada as there could be in Ulster, for the capabilities of Canada as a flax-growing country had not been properly brought out. It was to state that fact to those interested in the subject that he had come to the meeting that day; and, without wishing to prevent parties attempting to procure flax in India, he thought that the manufacturers might be able to get a portion of their flax from Canada. It would, no doubt, require a good deal of time before a large quantity of flax could be cultivated in Canada In Lower Canada the population, he might state, was principally French, who were not so ready to adopt new plans or new crops as were the Anglo-Canadian tillers who lived chiefly in Upper Canada.—There were a great many settlers in Upper who had been very successful in life, and he did not see any place in which he had ever been where small farmers had a better prospect of succeeding that in Upper Canada. He thought that thousands of small farmers in this country might materially benefit themselves by going to Canada. Now, what he had to recommend was, that the manufacturers of Ulster should send out an intelligent person to inspect the establishent of Messrs. Perine, and then to purchase some flax fields in a locality where there was good water, in order to test the question as to the cultivation of flax in that country. It was of importance that plenty of good water should be in the locality, for the water made a material difference in the quality of flax. On his own farm in this country he grew, last year, four acres and a half of flax, and for a portion of it he got £5 per cwt., whilst, for another portion, which had been steeped in other water, at the distance of one mile and a half from his place, he could only get £3 2s. 6d. per cwt. He mentioned that, in connexion with his remarks about water in Canada, because a field of flax which might be worth, in one township, having good water, say £10 per acre, would not be worth £5, in another, where the water might be impregnated with various ores, which would deteriorate the quality of the flax. It would not cost much for the manufacturers of Belfast to send out a competent person to Canada to try the experiment, and see how far it might be advisable to attempt the cultivation of flax in Canada. The flax prepared in the establishment of the Messrs. Perine was principally spun to make shoemakers' thread. In Boston the shoe-making trade was carried on to a great extent. The shoes and boots manufactured there were sent to all parts of the States, and even to South America Shiploads of shoes and boots were sent off from Boston from time to time; and it was to supply them for that trade that the flax in Canada was principally used. It was also used for sail-cloth, and such coarse fabrics. He believed that the flax in Canada, if properly prepared, would be as good as it could be produced in this country.

He would recommend at first the flax

not to be ripened too much, with the view of saving the seed. He would sacrifice the seed; for, when the flax was allowed to ripen to such an extent, the fibre was not so fine or so useful as an article for spinning. The agent to be sent out to Canada could carry on a correspondence with the secretary of the association that was for cultivating flax in India, with the view of making each other acquainted with what they were doing. That was the substance of what he had to communicate; and, in consequence of seeing reported the proceedings of their last meeting, it struck him it might be advantageous to manufacturers to let their views be known to them, and he accordingly wrote to Dr. Hodges to state that he would attend, in company with Mr. Donaldson, Canadian Emigrant Agent, who was now in this country to give grants of 100 acres of land to farmers who might be disposed to emigrate.

The Chairman enquired as to the quality of the water in Canada?

Mr. M'Crea—They have as good water as is here. I saw none with sediment in it, as may be seen in brooks in this country.

Dr. Hodges said that the French Canadians cultivated flax to a limited extent, and that it required to be shown whether it could be extensively cultivated.

Mr. M'Crea remarked that land in Canada was strong enough to carry wheat or flax once or twice.

Mr. John Andrews—Are you aware of the reason why steeping flax is not practised when the water is so good?

Mr. M'Crea explained that their market was always in the Eastern States, and this article was good enough for it.

Mr. Andrews—But it does not appear that it would be more expensive.

Mr. M'Crea—Yes, it would be more expensive, for they would lose the seed. They dry the flax in the stook, and stack it afterwards.

Mr. Andrews—After they have taken the seed, I do not see any reason why the flax should be dew-rotted rather than steeped.

Mr. M'Crea—I spoke to Mr. Perine about it, and he said he did not know anything about steeping. I saw a field of as good grown flax in Canada as I ever saw on my own farm.

Dr. Hodges exhibited a specimen of prairie soil from Illinois.

Mr. M'Crea said he travelled through Illinois, where he saw a man cutting wheat. He was cutting at the rate of sixteen acres per day, but he only cut off the heads of the stalks, and ploughed down the straw.

Mr. Wm. Ewart, Jr., said that it was very satisfactory to hear from so competent an eye-witness the confirmation of an opinion which he for some time entertained, that Canada could produce very excellent flax. He had had the pleasure of a long conversation with Mr. Breakey, from Canada, who was very much interested in the question; and he (Mr. Ewart) was satisfied that they could grow flax there very well, indeed, and even better than he had ever expected to see it from India, or better than they got it from Russia. He believed a good deal had already been done in initiating the growth of flax in Canada. They grew there a considerable quantity which was taken off by the Americans, having had their attention called to the subject by the agitation going on here for a larger supply. But they were influenced by others growing flax in Canada. They were greatly troubled with the weavel in wheat there, but he believed it was found that wherever flax was grown the weavel disappeared. He understood from Mr. Breakey that the system adopted in the establishment with which he was connected in Canada was the same as that practised at Courtrai, with the difference that at Messrs. Breakey's place they used cold water instead of hot. They had large tanks in which the steeping process was continued for a long time. Now, he did not make these observations with the idea of throwing any impediment in the way of Mr. M'Crea's suggestion being carried out. They could not make too great an effort to effect the object in view, and, in his opinion, Mr. M'Crea's proposal was a sensible one, and he would be glad to assist in sending out a competent person to Canada to look after the matter.

Mr. Washington Chartres inquired what price Mr. Perine got for the flax he produced?

Mr. M'Crea said it was from £2 10s. to £3 per cwt., but there were only 100lbs. in the cwt. weight.

Mr. Chartres—I would like to know something of the cost of the labour in connexion with the flax.

Mr. M'Crea thought it would not be exceedingly expensive.

Mr. Chartres—Would it not be double what it is here?

Mr. M'Crea—It would not be double. If the farmers were to take it up themselves, and work it by their own families and labourers, as they do here, it might be done at leisure times as cheap as here.

After some further conversation upon the matter, and in pursuance of a resolution of the annual meeting, the following gentlemen (with power to add to their number) were then appointed as a committee to take the subject of flax cultivation into consideration:—Messrs. John Roberts, William Ewart, Washington Chartres, William Charley, John Andrews, R. Gordon, and Professor Hodges.

Harvesting Peas.

EDITORS CANADIAN AGRICULTURIST.—As I intend to grow forty acres of peas this season, I feel somewhat interested in the mode of havesting them, and will therefore be much obliged by any information you may give me on the subject through the columns of your paper, and probably some of your practical correspondents may add their knowledge and experience.

I have tried many ways, such as cuttting with

hooks and sickles, mowing with scythes, and pulling with horse-rake; and from what experience I have had, I fall back upon mowing with the scythe, which costs eighty cents per acre, and is entirely too much to pay, and occupies too much time.

If you know of any implement specially for this purpose please make it known; if you do not, and consider the horse-rake the best implement, please state whose make to use for the purpose, and how to use it, so as not to fill your grain with all kinds of rubbish and small stones.

I feel the less delicacy, gentlemen, in giving you this trouble, as you always seem to court it, and as I have been a subscriber to the paper from its very first issue I think you will oblige,

Yours, DOVERCOURT.

March 11th, 1861.

Fat Prize Cattle—Judges should be Firm.

At the request of a subscriber we insert the following extract from the speech of Captain Tanner Davy, one of the Judges on Devons, at a recent exhibition of the Cornwall (England) Agricultural Society, as not being altogether inapplicable on this side of the Atlantic:—

"In behalf of the judges of Devon cattle, I beg to thank you for the honor you have done us. I hope our decisions have given you satisfaction; they have satisfied us, and I hope they have satisfied you. I don't much care whether they have satisfied you or not. You put the matter into our hands to decide. I knew no person in the county; I knew no person's stock. We decided according to the best of our ability. No doubt there must be dissatisfaction, because every exhibitor going into a show-yard is prepared to look with a very powerful magnifying glass at the good qualities of his animal, and he does not see any defect. We (the Judges) must apply powerful glasses to see the defects, and must award the prizes to those animals that possess the greatest number of good points—the greatest quantity of beef on the most valuable parts. As soon as my decisions were over, I took off my badge and walked about the yard to hear the remarks. One hot-headed old gentleman said we ought to be put in the train and sent off to Devonshire. I asked him to be kind enough to tell me what it was all about; he pointed to a second-rate bull in the old class, and said it was better than the first-prize bull. I said, 'Why it is a year and four months older, and yet it girths only one inch more; and that is very little for an animal to grow in a year and four months.' That he admitted; 'but,' he said, ''tis a better bull altogether.' I told him the first-prize bull was of a very much better quality, from head to tail. He said he had nothing to say to that, but the other was a better bull. On that I said 'I have nothing more to say to you,' and we parted company. Some of our friends have remarked that Cornishmen have been found fault with for not knowing how to farm. But they know how to make young bulls very fat at a very early age. There's no doubt of that. My friends and I have often before been called on for this sort of work; and therefore Cornish fat could not entice us from certain animals which had tendency to fatten.—I contend it was our duty as Judges, not to be led away by fat animals, but to see if there were not other animals, in fair condition, with a tendency to fatten, and of much more even shape. I would draw attention to the first-prize bull and the third-prize bull in the second class. They would be called by some persons two small, poor little things. But why? Only because so many cwt. of oil-cake had not passed through them. Put as much oil-cake or other nutritive matter into them, and put them side by side with others, and then see how they would look. But, you know, fat will often cover deficiencies. These little animals that we have awarded the prizes to were not fat, but they have a tendency to fatten, and it would require more powerful eyes than I possess to point out any deficiencies in their present state. I should not be afraid to meet any gentleman dissatisfied with our awards, and if he would walk about the yard with me, I would fight him, from head to tail, as to any animal that has won a prize. There was among the cows an animal that you may wonder did not get a prize. We did not notice her at all. One gentleman informed me that we did not know anything about it. I replied, 'Very likely not,' but I said, 'The prize is offered for Devon Cows, as milking cows. This cow is owned by a gentleman I have known many years. She is a very beautiful animal—of beautiful quality, and the best shaped in the class, in my opinion. But she gave milk only at one teat; and I did not consider that a cow so injured was a fit animal to receive a prize as a milking cow. In agriculture, milk is a rather important element of produce, and butter sells at a good price. We know that it is an all-prevailing law in the animal kingdon, that like produces like; and I believe that the offspring of that cow would be diseased—not to the same extent, but in the same way that she herself is. For that reason we did not award her a prize. I have mentioned these reasons to you, and let all who are dissatisfied go home and ruminate upon them. I would appeal to any practical man of unbiassed mind, whether they are not reasons that ought to weigh with those who have the duties of judges in a show-yard."

At the same meeting, Mr. Philips, of Totnes one of the judges on Short-horns, spoke for the Short-horns much after the same fashion as Capt. Davy did for the Devons:

"I am now going," he said, "to advert to a

subject which has already been introduced. It is a growing evil, and one that ought to be put a stop to, the exhibiting on these occasions stock that have been artificially brought to an unnatural size, only for the purpose of getting prizes. It is an injury both to the public and the breeder; because such animals seldom breed; and if they do, they rarely produce good stock. I believe the remedy is in the hands of the committee who appoint the judges. You know full well that on many occasions there is placed in the hands of judges a rule that they should not award prizes to stock in an unfit state for breeding. The question is, do they adhere to that? I say not. Invariably this question is entirely overlooked, because they who have the management of these societies consider that if they were to carry out this rule they would injure the show, as such and such fat stock from certain breeders would not be exhibited. But I contend it would not be so. Carry out that rule, and you would find that these societies would have much more beneficial effect than they have now. You would find those gentleman who declined to exhibit would soon return, and would exhibit their cattle in a natural state. Further than that, there are many who now refuse to exhibit very good stock, because they know that on these occasions the prizes are awarded, not to the most skilful breeders, but, very often, to the most extravagant feeders."

The *Mark Lane Express*, alluding to these remarks, well observes: "Our readers know how long this has been our own argument, and how thoroughly it is justified. It is this overfeeding that brings prize stock into such disrepute—that lands them in America and the colonies dear bargains and barren butcher's beasts. It is this that tends to all the humbug and secrets in the management of a herd, where one set of animals are kept for use, and another for show. It is this that deters so many good men from ever exhibiting at all. The remedy, however, rests clearly with the judges. No matter how ready the Stewards or the Council may be to pass over the abuse, let them only act up to, and speak out, like Capt. Davy and Mr. Phillips, and they may soon do a deal of good. Never mind what interested people may say who have dairy cows too fat to give milk, or bulls too pampered to get stock. If they are fit to be judges at all, they can estimate fairly fed animals quite as correctly as they can the over-fed. And a man who prizes a beast at a breeding show chiefly because it is made up for a Christmas one, is simply sanctioning an absurdity, a contradiction, and a delusion—if not a dishonesty.

French and Irish Progress.

We have been not a little surprised to find in a recent number of the *Agricultural Review*, published in Dublin, some statistical facts which seem to show that Agriculture in France has steadily improved as farms diminished in size and increased in number, while, on the contrary, in Ireland agricultural products have diminished as the size of farms has increased, and the number conequently diminished. Thus going back to one of the most calamitous periods of Ireland's history, 1847, and comparing it with the last year, during which interval the size ot farms in most districts has been more or less increased, we find the following results stated:—

	Acres under cereal crops.	Acres under green crops, excluding potatoes.
1847....	3,313,579	.501,934
1860....	2,637,557	.464,080

And the retrogression is only made the more apparent by the fact that, in 1847, we had under potatoes only 284,116 acres, whilst in 1860 we carried our foolish trust in the treacherous root so far as to lay down 1,594,486 acres under it. Still more striking is the contrast between French and Irish progress when we bear in mind that French production has been increasing coincidentally with a steady multiplication of small holdings, whilst Irish production has been falling off coincidentally with a steady absorption of small holdings by large farms.

In 1858, a paper was read before the Royal Dublin Soiciety on "The Agricultural and Social State of Ireland," in which we find it said: "A brighter and happier day has begun to dawn on Ireland, aud the tendency all over the country is onward in the march of improvement. . . . The smaller farms are yearly decreasing in number, and with them the smaller tenantry also. From 1849 to 1856 there has been a diminution of 14,146 holdings of 1 and not exceeding 5 acres; of 33,966 holdings, above 5 and not exceeding 15 acres; and the total diminution of all holdings between 1841 and 1856 is 98,625. There still remained, in 1856, 82,035 holdings of 1 and not exceeding 5 acres; and 179,931 holdings of 5 and not exceeding 15 acres. The total number of holdings of all sizes in 1856, was 592,489. As the number of the smaller holdings decreases, and the number of the larger ones increases there appears little doubt but the better culture of the ground will follow: fields will be enlarged; useless fences, and ditches and roads will be eradicated; better houses and offices be built; and improved husbandry follow." We have already compared 1847 with 1860, as to the area under cereal crops. When Mr. Miller wrote the above he had before him Mr. Donnelly's Agricultural Returns for 1857, and was thus able to see how the facts of the case bore out his theory that improvement must be promoted by the consolidation of farms. In the twelve different descriptions of crops mentioned in those returns, there

are only three which show any, and that but a trifling increase, in 1857 as compared with 1847 these are potatoes, mangel wurzel, and hay. In all the rest there is a falling off:—

		Estimated produce		Average produce per acre.	
Wheat...	1847,	2,926,733	qrs.	6.6	barrels.
	1857,	1,662 957	"	5.0	"
Oats....	1847,	11,521.606	"	8.4	"
	1857,	8,895,347	"	7.2	"
Barley...	1847,	1,379,029	"	8.7	"
	1857,	848,783	"	7.3	"
Bere....	1847,	274,016	"	8.6	"
	1857,	28,553	"	7.3	"
Rye	1847,	63,094	"	8.2	"
	1857,	49,252	"	5.2	"
Beans and Peas,	1847,	84,456	"	28.4	bushels
	1857,	44,046	"	25.9	"
Potatoes.	1847,	16,385,562	bbls.	57.7	barrels.
	1857,	28,074,751	"	24.5	"
Turnips .	1847,	5,760,616	tons.	15.5	tons.
	1857,	4,360,197	"	12.5	"
Mangel-Wurzel	1847,	247,269	"	18.0	"
	1857,	298,515	"	13.9	"
Cabbages	1847,	361 720	"	14.4	"
	1857,	327,875	"	10.9	"
Flax....	1847,	2,798,976	stone	48.0	stones.
	1857,	2,315,980	"	23.7	"
Hay.....	1847,	2,190,317	tons.	1.9	tons.
	1857,	2,556,644	"	1.9	"

A falling off, altogether, in crops, to the amount of nearly eleven millions and a quarter of money, whilst the increase in stock was not half that amount.

And if the comparison were carried down to 1860, every one knows that it would be still more subversive of the theory adopted by Mr. Miller.

Thus, then, production in Ireland falls off as the small holdings diminish in number, and in France it increases as the number of small holdings increases. But what is still more remarkable, keeping in view the theory in question, is, that even taking the same year, and comparing the large and small holdings in Ireland, it appears that the results are just the reverse of what is generally supposed. Thus, taking the year 1857, Mr. Hayes, in his pamphlet on the "Waste Lands of Ireland," divided the farms into two classes:—No. 1, averaging 15 acres 3 rods and 38 perches, and comprehending 8,148,022 acres; and No. 2, averaging 142 acres 1 rood 18 perches, and amounting to 12,072,560 acres. We need not follow Mr. Hayes through the several tables which he gives to show how these were distributed under the various crops and stock. The results in cash are sufficient for our present purpose. The estimated value of the crop on No. 1 was £16,039.593, and of the stock £17,233,176—total, £33,272,769; No. 2, the large farms, with a half more of land among them, gave crops valued at £11,288,645; stock £17,113,252, giving a total of £28,401,897. In other words, even in Ireland, the small holdings, with inferior land, yielded an average of more than 81s. per acre, whilst the large, with the best land, only yielded the country produce to the amount of 47s. per acre!

A Description of Lois-Weedon Husbandry. 1860.

Very early last spring a first-rate practical farmer visited the Rev. S. Smith of Lois Weedon, went over and inspected his field of wheat, and said,—'It is capital land, sir,' but nothing more. He was undeniably right, says Mr. Smith, that is capital land, beyond his estimate by 15s. at least. For a portion of the field which was dug double first, has a staple of rich mellow loam, from 18 to 20 inches deep; and the remainder a few inches less. So that, beyond a doubt, it is first-rate land, of the highest value for the growth of every description of crop.

But as Mr. Smith's visitor came to inspect and report, he should have gone below the surface and said something more, as I did when I visited the spot, investigated what I saw there, and believed. Resting where *he* did, the inevitable conclusion was, "there is nothing in it; no wonder the crops are heavy, for the land is good." He should have gone to the ditch side, says Mr. Smith and looked. He should have taken a spade and dug. His office was a responsible one, and he should have rigidly searched out the truth. He would then have got an inkling of the gist of the whole scheme. He would have found out that the staple of Mr. Smith's field at the outset was, for the most part, only five inches deep, with a subsoil, generally, of stiff yellow clay. This five-inch staple was deepened by degrees. At intervals, inch by inch, the clay was brought to the surface and mixed; and at the end of seventeen years—for there were two crops before the first sowing of wheat—the field has become what it is, a brown deep loam, worth 60s. an acre.

His duty was not over then; he should have found out the actual rent of similar land under ordinary tillage. Mr. Smith's own tenant has, in round numbers, a 400 acre farm adjacent, with a deeper staple, and of similar quality, which he rents at 27s., and for heavy, hard-working land like that, he (Mr. Smith) declares it is rent enough. *That*, he believes, is the average of such land all over his parish of 2,000 acres. A wide strip of the same heavy land, of the same geological formation, runs right through the country, north and south, and lets, he believes, at much the same rate. And yet the field he cultivates is picked out and arraigned as capital land—the best wheat land in the country; and with laughing crops, never ending, still beginning, pleads guilty to the charge.

But this was not all. When Mr. Smith's visitor ended his survey, and came back from the

triple-rowed wheat, and the yard-wide fallows, he gravely demanded, "Sir, why would not *this* do as well; set apart an acre alternately wholly for wheat, and another acre alternately for fallow. Let the two acres be cropped and fallowed in succession. It would be easier, why not as well." It was quite impossible to answer this question seriously and fully then; and so it is now, without speaking a pamphlet, and that would be a tiresome tale twice told. Why, it touches the main point of the very gist of the scheme. The scheme is, to get, without manures, a full crop of wheat, and at the same time a bare fallow, too. Suppose, then, two acres on the fallow intervals and triple-row system, and another two acres on the suggested plan. In a succession of years 35 bushels would be the possible average of the latter two acres together; while, judging from the past, the yield of the former two together would be 70 bushels—just—*double* as much.

The practical farmer objected still. "The plan seems a sound one, and the practice is good, but the details are difficult, troublesome to learn, and hard to carry out—and where are the hands? It cannot be done on a *farm*. Besides we don't depend upon wheat; things are altered now, and other produce is as paying as wheat."

He was so far right, that things are much altered now. There is full employment for the labouring man. With many drawbacks, still times are not bad, so that what drew attention in '50 and '60 was obsolete. Mr. Smith agrees with myself, and will never believe, notwithstanding, that the plan cannot be done on a *farm*, for a change has arisen in our favor too. Hand labor is scarce; but we need not trust mainly to that, for steam has come to supplant the fork and the spade, and trenching can be done as well by the plough, as described in a former paragraph.

There is a great virtue in the short monosyllable, *if*. "If farming were his pursuit," writes the Rev. gentleman; "if his tastes lay supremely that way; if, above all, other and higher aims were not his calling, he should take in hand his 400 acres of clay land at once; he should do so with confidence, for his thirteenth wheat crop (for 1859) was 38 bushels. The fourteenth (for 1860), unthrashed as yet, (January, 1861), was exceeding-y fine. Having been early sown, it was cut early, without a drop of rain; and again the estimate of the yield is 40 bushels. The growing crop for 1861, notwithstanding the frost, looks strong and well, with scarcely a gap." Thus, year after year gives confidence in the scheme; and he speaks with the utmost sincerity when he declares that, according to the best of his belief, and judging from the past, the annual results of an actual farm would be highly successful.

Trials have taught him on what plan he should farm. Twice he has grown oats in tripple rows, and 3 feet intervals; and he makes a heavy demand on the faith of the reader when he tells him that the produce of the first year was 8½ quarters per acre; or rather half an acre of fine upstanding Poland oats—upstanding from being earthed up—the weight of which was 46lbs. to the bushel; and of the second year nearly the same. (And here I would fain observe, that I myself last year grew winter-barley on the same plan, and hope, again, to do so this year, equal to 10 quarters and upwards per acre, cut in July.) Mr. Smith's winter beans also, have been a full average crop, year after year in rows 5 feet apart, and not a weed being allowed to seed. These, however, with the help of manure under the rows.

The general mode of cultivation, then, would be with manure for oats, barley, beans, and roots. The intervals should be wide, seeing that, while the produce of the *half* is as much as the *whole*, the additional benefit of *clean, deep, ready prepared*, fallow for *future crops is beyond all price*.

I do not propose in this paper to embrace or discuss the whole subject of potato culture, but merely the putting-in of the crop. It may, however, be right to offer one or two suggestions of a general character. It has been urged that to dry the sets will greatly tend to prevent the attack of the potato disease; many of mine were nearly dried up last year, but I had quite enough of the disease. True, they were dried under a hovel by long exposure to drying winds, uncovered—not by stove-heat. Where lies the difference? * Dusting the sets with lime or gypsum is said to be efficacious. I have not found it so with lime; gypsum I have not tried. Manuring with lime and salt is another of the many safeguards adopted; it also proves unavailing. Peruvian guano, again, is extensively used, and with this good effect, at least, that it so promotes and stimulates the growth of the crop, that it forms good and large tubers at a very early period. Manuring with farm-yard manure immediately before planting is decidedly conducive to an attack of the disease; it ought to be applied in the winter, if requisite to its fertility. A dry soil and a dry season conduce much to the safety of the crop; ungenial weather and a wet soil are fatal. The approved varieties for planting are but few. If a new variety is introduced into a district untainted with the disease, it seldom lasts two seasons. The "fluke" potato in the past season stood here better than any other. On soils that could not be kept dry they constituted our best crop. In one instance coming under my own knowledge the crop was free, owing to the dry, rich loam where they were grown. The "snowballs" came next, but suffered severely. Regents were

* I am aware that artificial heat of a sufficient temperature to destroy the virus is the grand secret; but what a difficult matter for growers to undertake!

almost a failure. Ash-leaved not their own again. The highest quotations this week run thus:—Flukes, 160s.; Regents, 120s.; Dunbar, ditto, 180s.; North Berwick ditto, 125s.; Perth ditto, 105s.; Perth rocks, 100s.; Scotch cups, 110s.; Scotch rocks, 105s.; French Whites, 90s; Belgian ditto, 80s.; Dutch ditto, 80s.; and other kinds 80s. These of course, form the prevailing varieties, for which, on application to a London salesman, any grower may obtain seed, and which he will get at about two-thirds the average price of "the heads." An intelligent London salesman is, upon the whole, the best erson to consult as to the sort to be grown, and in making application, a description of the soil should be given, and the district where situate should be named. I would only make one further remark; it is this:—It is imperatlvely necessary to the prosperity of the crop that the land be kept dry; certain failure is the alternative.–A. HARDY *in Mark Lane Express.*

Self-Propelling Agricultural Steam-Engine.

[The following description of Aveling's Steam Engine, from the *British Engineer*, will interest our readers, and from what we saw of its performance last summer at the Royal Agricultural Society's Show in Canterbury, we believe it to be strictly correct. Some of the heaviest steam ploughs, threshing machines, &c., were drawn by the locomotive with apparently the greatest ease and safety through the streets of that ancient city, crooked and narrow as many of them are. The progress of steam as a motive power in agriculture is making some, if not rapid advances. ED'R.]

Since the first application of steam power to farming purposes, it has been more or less desirable to make the engine self-propelling, so that in taking it from one farm to another, as has often been done, the necessity of from five to ten horses may be dispensed with. Some of our makers of portable engines have turned their attention to this matter, and among those who have most successfully supplied the want in question is Mr. Thomas Aveling, the well-known implement maker, of Rochester. Without emulating the ingenuity displayed in the 'traction engines,' Mr. Aveling has contented himself with applying to the ordinary portable engine of the farm, such means of self-propulsion as shall secure its progress from one estate to another, the speed slow and under complete control, no matter how hilly, rough, or heavy the roads. On Tuesday last a trial of two of Mr. Aveling's engines were made in the neigborhood of Rochester, in the presence of a number of gentlemen interested in the application of steam to agriculture. The engine had a 9 in. cylinder, 12-in. stroke, and 5½-in. driving-wheels, geared to make 1 turn for every nine of the crank. The weight, including 3 cwt. of coal and 150 gallons of water, was about 7½ tons. The steam was maintained at about 70 lbs. pressure, and the speed of the crank-shalft varied from 120 to 140 turns per minute. The engine drew behind it a threshing and cleaning machine and straw elevator, weighing, together, in the neghborhood of six tons. A circuit of about five miles was made over a very hilly portion of the parish of Frindsbury, adjoining Strood. The engines and trains ascended and descended long inclines of 1 in 12, maintaining a uniform speed of nearly three miles an hour in both directions, generally making an abundance of steam, moving with great steadiness, and steering with the utmost ease in any direction. The ground included hard gravel and heavy clay, on both of which the engines proceeded without difficulty. On their return they came through the main streets of Strood, crossing the new bridge, and passing through the principal streets of Rochester on their way to Mr. Aveling's works. A great number of horses were passed, but none exhibited any signs of alarm, even when the strange procession came suddenly upon them. The engines were in complete order at the completion of the trip, and their performances gave much satisfaction to those who witnessed them.

Agriculture: Its Past, Present and Future.

(*Continued from page* 237.)

The importance of Improved Means of Locomotion for our Farm Steam Engines is well illustrated by the following fact:—On a recent visit to a spirited improver, on a heavy farm, I saw Fowler's steam-plough working a circular saw instead of drawing the ploughs. "You see," said my friend, "here is my £700 worth of power unavailable for cultivation. It weighs seven tons, and although our land is drained it is impossible to get it about our stiff clays. I propose laying down a light rail for it through the centre of this 250-acre piece, so that its power may be at any time exerted, either on the land or on the farm-yard." And this reminds me how unreasonable it is of the Royal Agricultural Society of England to try all their implements in the hot, dry month of July, when the winter difficulties of a stiff clay farm are thus practically ignored. Let

us hope that the prize-sheet of this society will offer prizes for the best and cheapest railway means of rendering steam-power available at all seasons, except during severe frost. I am gradually coming to the conclusion that such means will be a necessary concomitant of steam culture, as it has been to our locomotion. It must not be forgotten that one meritorious feature of Mr. Smith's (of Woolston) system of steam culture is, that there is very little necessity for removing the heavy engine—a great advantage in wet seasons on a heavy-land farm. While on this subject permit me to quote a letter from Mr. Pike, which illustrates most forcibly, clearly, practically, and truthfully the enormous advantages resulting from *The Use of Steam in Cultivation*, and of the necessity for fixity of engine in wet weather on stiff clays. "Stevington, near Bedford, Dec. 31, 1860. GENTLEMEN,—I very willingly send you my views and opinions upon the Steam Cultivator. Before I came into Bedfordshire I farmed in Buckinghamshire, when I knew the land of Mr. Smith, of Woolston, and having witnessed the great improvements he subsequently made by his system of steam cultivation, I was induced to order a set of the apparatus for three seasons, and having done upwards of 2000 acres of land with it, I am in a position to speak with some confidence as to its success. The effect on the crop has been very visible this season, but I think the greatest advantage was manifested last harvest. My wheat crop was particularly good, which, after so much wet, I had no right to expect on such heavy land; but I find, after steam cultivating, the water gets down to the drains so much quicker, indeed I have now dispensed with the furrows altogether; one field, which is rather steep, containing fifty acres, all lies on the flat and I never saw any water stand upon it, although the land is very stiff. My farm, belonging to the Duke of Bedford, contains about 370 acres of arable and 130 acres of grass land. I formerly worked fifteen or sixteen horses, but since I have got my steam cultivator I have managed with seven or eight, and have always been much more forward with my work than when depending upon my horses; indeed I should be very sorry to farm this strong hilly land without steam power. I am also enabled to grow a much larger acreage of root crops with a heavier yield. The present season proving so excessively wet has prevented me doing so much work as I should have done, still I am very much forwarder with my work than I could have been with fifteen horses to keep, whether able to work or not. I have 75 acres of wheat looking remarkable well, some of which would certainly not have been sown had I not had the steam cultivator. I have also put in my tares with the steam cultivator; on account of the wet I sowed them on the stubble before breaking it up; they promise better than those around me, put in in the ordinary way. I therefore entirely disagree with people who entertains the notion that a steam cultivator is of little use in such wet seasons. I have found it exactly the reverse. I have also broken up and crossed my wheat stubbles, intended for roots and mangolds, and, notwithstanding the wet, I have made a good job of them. I usually bout this land in 27-inch ridges, as I think it lies drier and sweeter for the winter: but the backwardness of this season has prevented me. My clover leys I broke up just before harvest, and as usual made a *bastard* fallow of them. From long experience on clay land, I am convinced that this system is a surer mode of securing a good wheat crop than leaving your clover ley down until Michaelmas; it also has this advantage, the work of the farm does not fall in so much at one particular time. My tare land was broken up before I commenced the clover leys. Upon my bean stubbles in an ordinary season, I use my steam cultivator only once, merely harrowing once before and once after the drill. Last year I cultivated sixty acres of bean stubble in this way, upon which I had most excellent crops of wheat. I kept an accurate account of the cost of preparing this land by steam, and found that for labour, fuel, etc., it was exactly 4s. 7d. per acre. I have no interest whatever in extending the use of the steam cultivator, but feeling obliged to Mr. Smith and yourself for enabling me to cultivate my own land cheaper and better, I have thrown open my farm to all comers, and, in addition to many from distant counties, it has afforded me pleasure to find some of my neighbours, good practical farmers, following my example; for when I commenced, very few thought I was acting wisely in making so great an outlay in what they termed 'an experiment.' In Mr. Dring's letter, I notice he says that he finds setting down to a large piece is a mistake; I think it is a mistake to set down to small pieces. I have one field of 36 acres which I break up without going into the field at all. I put the engine and windlass in an adjoining field, and finish headlands and all, without shifting either engine or windlass. I have another field of 50 acres, in which I have dug a pond at one end, and set the engine and windlass against the pond, and cultivate the whole without shifting or requiring a horse to fetch water. I sometimes dam up drain or ditch, and obtained water in that way, for in a wet season water carting is a great nuisance. I have increased the length of my ropes to enable me to do these large fields. I expected it would take more power, but I don't find it makes much difference to my engine, which is one of Clayton and Shuttleworth's 8-horse double cylinder. I was always told, 'Don't get too much rope out, you will want so much more power.' I am no engineer, and cannot go into the reasons, but I find from experience that the length of rope makes very little difference to my engine. As

before stated, I have now done with the steam cultivator upwards of 2,000 acres of land, and my rope, although the worse for wear, is still in working order; the other portion of the apparatus is very little the worse for wear. I am convinced that, if people will attend to the coiling of the rope, and exercise moderate care, the rope will last for years. I am sure the expense of keeping the whole in repair is not nearly so much as the repairs of a steam thrashing-machine. I prefer the engine and windlass separate, as they are more easily moved from field to field and along bad roads, than the combined engine and windlass I had on trial. I don't think much will be done in letting out steam cultivators, as the expense and trouble of haulage is so much greater than with thrashing machines. I speak from experience, as I have let out both, but have given over letting out my steam cultivator; indeed, I have 90 days' work a year for it on my own farm.—I am, gentlemen, yours truly, WILLIAM PIKE.—Messrs. J. and F. Howard, Bedford.

The Test of our still Backward Condition in Agriculture, and the Necessity for its Improvement.—According to our best calculators, the average gross available agricultural product of Btitain is barely £3 15s., or less than four rents, per acre. Our arable and pastoral available acres may be set down at 60 millions. Our population is 30 millions. We don't produce enough to feed them and their animals, and therefore they not only consume the produce of two acres per head, but are obliged to consume, at least another acre per head of foreign produce. Let us test this calculation by an unerring proof. 340 convicts in our City of London at Holloway consume weekly 2s. 3d. worth of food, or by the year £5 17s.; clothing, per week, 4d., 17s. 4d.; paupers in our East London Union consume weekly 3s. 8¼d. worth of food, or by the year £9 11s. 9d.; clothing per week, 3¼d. So putting the pauper and the convict together, each would consume £7 14s. 4½d., or more than the produce of two acres. How many acres would an Alderman of the City of London require? It really is a humiliating fact that we are unable, or rather unwilling, to feed our own people; for my own return per acre, on my own poor farm, is more than three times the average of the kingdom. Therefore, I know we could feed our people if we chose to invest enough capital and intelligence, both as land lords and tenants.

Spirited Instances of large, but successful Investments.—A friend of mine in Norfolk, who had farmed 1,200 acres of poor light land for some 25 years, told me the other day that he had expended £70,000 in oil-cake, and £50,000 in artificial manure during his occupation. This would be £100 per acre over the whole farm—pretty well as a tenant's investment; and we can hardly be surprised that his once poor rabbit warren land has now become highly fertile, profitable to the tenant, and producing a largely-increased rental to the landlord. But has the landlord done nothing in this matter? Oh yes; He has given hope and security to his tenant by a long and by a renewed lease. He has retained a good farmer on his estate, and sees in the rising generation of that farm young men brought up to a high and intelligent culture as a system. A foreigner was the other day, much astonished to see a farm-house, erected by the landlord, at a cost of £4,000, for the son of this farmer, who also farms largely. If the tenant has found and raised capital enough to increase the live stock and manure the soil, the landlord has been wise enough to provide the necessary accommodation and shelter for them. I will give also a spirited instance of recent judicious improvement on the part of a landlord. A merchant, who had realized a fortune in our colonies, and understood sheep, purchased an estate of 4,000 acres, in a county north of London, for which he paid some £130,000 or £140,000. It was a noble property, but, like many such, neglected, unimproved, and, consequenty low rented. The land, a rich stiff-clay, on the banks of the Thames, but undrained, and consequently, unprofitable. Most of it was in pasture. The owner is draining the whole of it four feet deep, eighteen feet apart, and when I visited the property a heavy stream of water was flowing from the aggregated drains—all top, or rain water. The result may be easily anticipated: the fine Lincoln sheep, which now thrive upon it, give evidence of its altered condition, and will pay a double rental. The same gentleman has thrown down the crooked fences, trimmed those that remained, improved the roads and buildings, and deepened the cultivation on the arable by steam power; in other words, the rental will be £8,000 per annum instead of £4,000. The whole drainage will be completed in three years, at an expense of £30,000, or something over £7 per acre: probably not less than £50,000 will be the total investment in improvements. The increase of the roots and winter food by this operation is already surprising. There is nothing in our history more contemptible in the eyes of a commercial man than the frequent and futile attempts of our governors and legislators to fix the value of commodities, whether by bounties or protection. Such attempts have invariably failed, as will be seen by the fluctuating prices and quantities of corn exported and imported, of which I annex tables:

Import and Export of Foreign Wheat and Flour.—Statement of the Total Quantites of Wheat and Wheat Flour imported into and Exported from Great Britain in each Year from 1697 to 1846.

Years.	Imported. Qrs.	Exported. Qrs.	Years.	Imported. Qrs.	Exported. Qrs.
1697	400	14,698	1772	25,474	6,959
1698	1,689	6,886	1773	56,857	7,637
1699	486	557	1774	289,119	15,928
1700	5	49,057	1775	560,988	91,037
1701	1	98,324	1776	20,578	210,664
1702	—	90,230	1777	233[illegible]93	87,686
1703	50	106,615	1778	106,394	141,070
1704	2	90,314	1779	5,039	222,261
1705	—	96 185	1780	3,915	224,059
1706	77	188,332	1781	150,866	103,021
1707	—	174,155	1782	80,695	145,152
1708	86	83,969	1783	584,183	51,945
1709	1,552	71,618	1784	216,947	89,288
1710	400	16,607	1785	110,863	132,685
1711	—	80,941	1786	51,463	205,466
1712	—	148,539	1787	59,339	120,536
1713	—	179,969	1788	148,719	82,971
1714	16	180,665	1789	112,656	140,014
1715	—	173,237	1790	212,577	30,892
1716	—	75,870	1791	469,056	70,626
1717	—	25,637	1792	22,417	300,278
1718	—	74,381	1793	490,398	76,869
1719	20	130,533	1794	327,902	155,[illegible]48
1720	—	81,[illegible]43	1795	313,793	18,836
1721	—	82,748	1796	879,200	24,679
1722	—	178,915	1797	461,767	54,525
1723	—	168,082	1798	396,721	59,782
1724	148	247,162	1799	463,185	39,[illegible]62
1725	12	211,175	1800	1,264,529	22,013
1726	—	143,626	1801	647,663	28,406
1727	—	31,030	1802	647,663	149,304
1728	71,574	3,935	1803	373,725	76,580
1729	40,315	18,993	1804	461,140	63,073
1730	76	91,530	1805	920,834	77,955
1731	4	130,650	1806	310,342	29,506
1732	—	202,612	1807	504,946	25,113
1733	7	427,425	1808	84,889	98,0 5
1734	7	498,717	1809	455,987	31,278
1735	9	155,280	1810	1,567,126	75,785
1736	18	118,218	1811	336,131	97,765
1737	32	466,671	1812	290,710	46,325
1738	3	588,284	1813	559 000	133,441
1739	23	285,492	1814	852,567	111,477
1740	5,469	54,391	1815	191,931	227,947
1741	7,540	45 417	1816	210,861	121,611
1742	1	295,698	1817	1,080,830	317,534
1743	3	375,979	1818	1,5[illegible]6,[illegible]31	5[illegible],668
1744	2	234,274	1819	471,607	44,689
1745	8	325,340	1820	591 732	94,657
1746	—	131,105	1821	137,684	199,846
1747	—	270,491	1822	47,598	160,499
1748	6	545,240	1823	23,951	145,751
1749	382	631,007	1824	85,183	61,680
1750	280	950,483	1825	391,588	3[illegible] 796
1751	3	662,957	1826	582,276	20,054
1752	—	420,117	1827	306,6 5	57,323
1753	—	300,754	1828	757,746	76,489
1754	201	356,781	1829	1,670,602	75,097
1755	—	237,466	1830	1,676,034	37,149
1756	5	102,752	1831	2,310,34[illegible]	65,875
1757	141,562	11,545	1832	681,765	289,558
1758	20,353	9,234	1833	3[illegible]2,256	96,[illegible]22
1759	162	227,641	1 34	[illegible]1,9[illegible]2	1[illegible]9,482
1760	3	393,614	1835	[illegible]9,635	1[illegible]4,076
1761	—	441,956	1836	264,400	256,978
1762	56	295,[illegible]85	1837	575,027	308,420
1763	72	449,538	1838	1,380,817	158,621
1764	1	396,857	1839	2,852,398	42,512
1765	104,547	167,126	1840	2,352,205	87,242
1766	11,020	161,939	1841	2,691,555	30,390
1767	497,905	5,071	1842	2,916,835	175,958
1768	349,268	7,433	1843	1,064,942	90,679
1769	4,378	49,892	1844	1,379,261	76,285
1770	34	75,419	1845	1,142,927	59,841
1771	2,510	10,089	1846	2,351,908	132,758

Is the Supply of Plant Food in the Soil Inexhaustible?

"Agriculturists ought to know that a field will indeed lose its productive power when left altogether unmanured."—COLUMELLA.

There are not a few of the most scientific and practical farmers of the present day who believe hat the application of manure to the purpose of fertilizing the soil is a useless expenditure of time and money.

If such a belief rest upon a foundation of fact, what an enormous amount of motive power has not mankind uselessly expended in the operation of manuring the soil—for the practice, (notwithstanding Hesiod's silence on the subject) is as old as Homer! If it be true, we must cease to sympathize with Professor Daubeny and the other renouncers of Hercules, for the enormous losses occasioned to agriculture by his reckless cleansing of the Augean stable.

The question, whether or not thorough tilage is capable of wholly superseding manure, is one of such vast importance to the whole community —for the rural and urban populations are equally concerned in the production of food—that its satisfactory solution would be one of the most important contributions to the science of our times. Let us see what we can do in placing the matter in a clear light before our readers.

There are two questions, which the Agriculturist who combines in himself the knowledge of the man of science, and the practical farmer can readily answer. They are as follows:—*What* is a fertile soil? One which is capable of yielding a long succession of crops without receiving manure in return. *Why* is such a soil fertile? Because it contains in *notable* quantities, and in an *available* condition, *all* the materials required to build up the vegetable fabric.

If we then admit what is indeed incontrovertible, that the fertility of soils is dependent on their containing a *certain* amount of matter, capable of being used as food of plants; and as it is equally true, that a certain portion of this stock of nutriment is annually removed in the shape of crops, the inquiry is narrowed down (to our mind) to the simple question of the amount of food required by the crop, and the quantity of food contained in the soil.

Although it is generally considered that wheat exhausts the land to a greater extent than any other crop, it is a fact that there are but few crops which remove less mineral matter from the soil; this will be evident from the following table:—

CROP.	Pounds of mineral matter removed from a statute acre.	Including Phosphoric Acid.	Including Potash.
Wheat....	150	20	33
Potatos....	180	72	100
Oats.....	200	34	42
Hay.....	400	28	136
Turnips....	450	42	130

Now, if we take as an experimental crop that which least exhausts the soil of its mineral matter, and if we compare the amount of nutriment which it annually requires, with the stock on hand, so to speak, in the soil, it becomes a simple matter of calculation how long such a crop can be grown. And this being determined, the import-

a it point arises—during what period of time can the crop be ecomonically raised?

Disregard such substances as lime, magnesia, and silica, which either occur abundantly in soils, or may be inexpensively added thereto, the two substances, the supplies of which in the soil chiefly concern us, are *phosphoric acid* and *potash*. The first of these is rarely found to constitute more than a half per cent. of the so-called fertile soils; in many of them it exists to the extent of but one-fourth of a per cent.; and, in most of the light soils in this country, it forms scarcely two thousandths of their weight.

In a soil containing a quarter per cent. of phosphoric acid (and this we take to be the average proportion of this ingredient in Irish soils, at least,) we have a quantity equal to that contained in nearly three hundred crops of wheat. But are we to assume that wheat crops could be grown in such soils for three hundred years without manure? Assuredly not, and for the following reason. It has been clearly proved that plants must have their nutriment brought into absolute contact with the *spongioles*, or little openings at the extremities of their roots. It has also been shown that the water which percolates through the soil does not perform the office (until lately ascribed to it) of bringing the nutriment of the plants to their roots, but that the latter are obliged to go in quest of their food. From this it is evident that the greater amount of absorbing root-surface possessed by a crop, the less necessary is it to supply the soil in which they grow with manure.

Granting that a field contains a sufficient quantity of phosphoric acid to supply the wants of 300 crops, it is evident that the plants forming the 300th crop must have their rootlets at some time during the period of their growth, in absolut econtact with every particle of the soil. But it requires no argument to prove the utter impossibility of this. Therefore, although a soil might contain a quantity of phosphoric acid more than sufficient to supply the wants of a crop of wheat; yet as the latter is not capable of throwing out a sufficient number of rootlets with which to gather all the phosphoric acid contained in the soil, the crop cannot be brought to maturity, and the soil will be considered *absolutely* barren.

The fact, that the addition to a fertile soil of four or five cwt. of guano or of superphosphate of lime, increases to a very sensible extent the amount of the crop grown upon it, whilst this manurial application to a (*chemically*) barren soil will produce no effect whatever, is a striking proof that the soil must contain a much larger quantity of fertilizing matter than is necessary to make up the mineral portion of one, two, or even twenty crops. This would not be the case if the food of plants were conveyed to them by water which moves through the soil, or were the vegetable mechanisms en abled to place themselves in contact with every particle of the soil.—*Irish Agricultural Review.*

Plaster.

At a meeting of the Farmer's Club, of Chester Co., Pa., a paper was read on the subject of plaster, which we find in the *Germantown Telegraph*, from which we take the following extract:—

With respect to the sulphate of lime or gypsum, its action appears to be more restricted than that of the carbonate, both as to the number of plants to which it may be advantageously applied, and as to its action on the growth of the plants; that is to say that, while lime seems to increase the size and weight of the seed as well as the herbaceous parts of the plant, plaster adds vigor to the growth only of the leaves and stems; and this is more particularly the case in regard to the cereals. This fact seems to have been satisfactorily established in France. A warm discussion having arisen in the neighborhood of Paris as to the value of plaster as a manure, the government thought proper to refer the question to the Royal Central Agricultural Society. The society selected some forty or fifty farmers, men of more or less education and intelligence, who had been personally occupied in agriculture for twenty years, and to each of them they addressed a series of questions. The result of the information thus collected was reported to the society by M. Bose. A few of the questions were as follows:

1st. Does plaster act favorably on artificial meadows? Of forty-three opinions given, forty are in the affirmative, and three in the negative.

2d. Does it act favorably on artificial meadows, the soil of which is very damp? Ten opinions given, unanimously, No.

3d. Will it supply the place of organic manure, or will a barren soil be converted into a fertile one by the use of it? Seven opinions given, unanimously, No.

4th. Does gypsum sensibly increase the crops of the cereals? Of thirty-two opinions given thirty are negative and two affirmative.

Taking the evidence here adduced as reliable and satisfactory, which I am entirely disposed to do, I think we may draw therefrom these inferences: In the first place that the extent to which the action of plaster is beneficial is limited—the grass crops generally being improved by its use, but the grain crops not. Secondly that it is money thrown away to plaster poor land until we have enriched the soil, as the inorganic manure must have an organic one with which to interchange its elements before it can become food for plants. It is a custom more or less prevalent to throw a little plaster on the Indian corn when an inch or two high, and I believe it is supposed by some to increase the crop of grain.

I have very little doubt that plaster promotes the growth of the stalk and increases the amount of fodder; but I am not disposed to think it increases the quality of grain, and my limited experience tends to confirm this belief. I also think it is better to throw the plaster on top of

the corn when it is planted, than to wait till after it is up an inch or two; as by so doing you stimulate and hasten the earliest growth of the young plants. Plaster has not in general been found useful to the root crops, though it has been said to be of service to turnips, and more so to potatoes—the evidence, however, is not satisfactory.

When peas and beans are intended for fodder, I have no doubt the haulm would be much enlarged by the use of plaster, but when these legumes are intended for the table, plaster should never be used, as the seeds assimilate this inorganic substance sufficiently to become hard on boiling. The gardener may tell you the season has been unfavorable, but it is the plaster he puts in the bed nevertheless.

Liebig says, "The carbonate of ammonia contained in rain water is decomposed by gypsum in precisely the same manner as in the manufacture of sal ammonia, soluble sulphate of ammonia and carbonate of lime are formed; and this salt of ammonia possessing no volatility, is retained in the soil." Now, it occurs to me that the farmer who occasionally scatters a little plaster over the manure in his barnyard, to hasten, as he says, the decomposition of the straw and cornstalks, (upon which in fact it has no effect whatever, it being well established that plaster has not the least power to promote the decomposition of either animal or vegetable matter,) is nevertheless doing himself an essential service that he does not dream of. For we know that the ammonia generated in the dung-heap, is in the form of a carbonate, which is extremely volatile; if, then, by the addition of plaster, the sulphate of ammonia and the carbonate of lime are formed through the interchange of constituents, as stated by Liebig, our farmer has accomplished with the least possible expense and trouble what is considered as of the utmost importance in the treatment of our barn-yard manure, namely, *to prevent the escape of ammonia.*

Potato Disease.

[The *London Gardeners' Chronicle* states the following plan of preventing the potato disease has been printed for private circulation by the discoverer, and has also been sent to that journal for publication:]

The potato disease may be said to have perplexed the wisdom of philosophers, and to have baffled the skill of practical men. It has, however, been recently and satisfactorily demonstrated, by microscopical examination, that the malady which has so seriously affected a very important article of food, is due to the deposition by the atmosphere of a minute Fungus, which, taking up its habitation first upon the leaf and the haulm of the potato plant, propagates with astonishing rapidity, and ultimately finds it way to the tubers and completely destroys them.

Having at first, without a knowledge of this theory, tried successfully an experiment which I have since found entirely to accord with it, I am anxious to place my experience before the public, satisfied that if they follow my example they will profit by the result.

Last season, I departed from the old system so far as the greater part of my crop was concerned, and pursued the following plan: I set the potatoes in double rows, instead of single; the two rows occupying about a foot; a foot of vacant space remaining on the outside of each row. They were planted upon the level ground, and hoed up at the usual time.

When the haulm had reached its full growth, about the 1st of July, I turned it over, right and left, towards the vacant spaces, by adding earth between the rows and pressing down the haulms, so as to prevent their retaining an erect position and to allow the rain falling upon them, instead of descending towards the roots, to fall upon the vacant space.

The kind of potatos upon which I experimented were "Regents" and "Flukes." Of the former, I planted one portion upon the old system. The land consists of a heavy clay—about as bad a description of soil as can be devoted to the growth of a potato crop.

The result was that the "Regents" planted upon the new system turned out to be a good crop, while those upon the old plan were a complete failure, although grown upon the same plot of ground, and planted at one time from the same seed. The "Flukes" produced an excellent crop, not two in a hundred being bad; while my neighbors, for miles round, without exception, lost their crops.

The efficacy of this system has been proved, not alone by my own experience and that of several others who have tried it, but has been confirmed by the following curious circumstances; A gentlemen who had planted a lot of potatos, having a number of planks which he required room for, but not knowing how to dispose of, he allowed them to be thrown down upon a part of the potato bed. Upon removing them sometime afterwards, and digging the potatos–fully expecting to find that those which had been covered and pressed down were completely destroyed—he found to his surprise, that those which the planks had lain upon were in excellent condition, while those that had been exposed in the ordinary manner were diseased. The laying down of the planks had, in this instance, effected the turning of the haulms, and sheltered the tubers from the wet; and the result was as good as if the system I have recommended had been carried out by design.

The success of my experiment is to be explained in this manner: A microscopic Fungus is first deposited upon the leaves and the haulm, where it multiplies by millions; as soon as rain descends, these parasitical plants are washed downwards to the tubers, which they immediately attack, and the potatoes are thereby destroyed.

By turning down the haulms over the vacant spaces, Fungi are washed by the rain from the plant on to the naked soil, where, wanting nutrition, they perish, and the tubers are protected from their destructive effects.

The result of my experiments being therefore entirely in accordance with the investigations of science, I feel anxious to make the new system of potato-growing known, feeling assured that it will prove a great boon to the community at large.

Agricultural Intelligence.

Linseed Meal for Calves.—The *Irish Farmer's Gazette* gives the following directions for feeding oil-cake to calves:—"Linseed meal is highly nutritious, and a useful auxiliary in feeding calves; each calf may get from one-half to one pound per day, according to size and age. The best way to prepare it is—steep a quarter of a pound for each feed in cold water, for 12 hours, then either dilute it with warm water, till of the temperature of new milk, making a gruel equal in bulk to the quantity of milk usually given, or boil it for twenty minutes, and let it stand till lukewarm; in the beginning but a small quantity should be given, mixed with the milk, and by degrees increase it and decrease the milk, till at the end of the month or six weeks, the calf may be fed alone on the linseed and may be allowed some grass, and finely cut roots.

Wheat in Lower Canada.—The following statement respecting wheat raised on Mr. Logan's farm, near Montreal, will show what Lower Canada can do; "Yield of Fife wheat from 9½ arpents of land, in 1860, (after green crops, Corn, Potatoes, Horse Beans, and Mangolds) 280 minots of prime seed wheat, weighing 66½ lbs per minot; 22 minots of tailings, weighing 61 lbs per minot, being at the rate of 35 39-60 per arpent, or 42 9-60 per acre. The seed was sown on the 4th of April, before the frost was out of the ground, though sufficiently so to admit of harrowing in. The crop was cut by machine on the 2nd and 3rd August, and all housed on the 7th. The yield of straw was heavy, clear and bright. The ground was only partially drained. There are 4,089 yards in an arpent, and 4,840 yards in an acre.—*Pilot.*

The Alpaca.—Recent endeavors have been made to introduce the Alpaca into Australia. The Alpaca is a native of Peru, somewhat smaller than the lama, but has wool remarkably soft and beautiful. Marketable fabrics were first produced from it in England in 1830. Since then the quantity imported has increased up to 2,500,000 in 1860. Large numbers have been introduced into Australia, which have thrived well, increased largely in numbers, the grass being found well suited for its food. The prospects of a perfect success of the experiment are very great,—a matter of considerable importance to the commerce of the country.

The following table shows the number of plants to the acre, at any of the distances mentioned:

Distances Apart.	No. of Plants.
1 foot	43,560
1½ "	19,360
2 "	10,890
2½ "	6,969
3 "	4,840
4 "	2,722
5 "	1,742
6 "	1,210
9 "	537
12 "	362
15 "	193
18 "	134

Canadian Standard Weight in a Bushel of Grain, Seeds, and Vegetables.—

Grain.
Vegetables.

Potatoes, Parsnips	60 lbs.
Carrots, Turnips	60 lbs.
Beets and Onions	60 lbs.
Salt	56 lbs.
Castor Beans	40 lbs.
Malt	36 lbs.
Dried Peaches	33 lbs.
Dried Apples	22 lbs.
Wheat	60 lbs.
Peas	60 lbs.
Beans	60 lbs.
Indian Corn	56 lbs.
Rye	56 lbs.
Barley	48 lbs.
Buckwheat	48 lbs.
Oats	34 lbs.

Seeds.

Clover Seed	60 lbs.
Flax Seed	50 lbs.
Timothy Seed	48 lbs.
Hemp Seed	44 lbs.
Blue Grass Seed	14 lbs.
Red Top Grass	8 lbs.
Hungarian Grass	48 lbs.
Millet	48

Cure for Lice on Cattle.

To one pail full of boiling hot water add one pint of flax seed, keep it simmering two or three hours, it will form a sort of jelly. Give a yearling one quart twice a day mixed in bran or provender. In a few days there are no lice to be found, the animal is in a more healthy condition, and the dry feverish skin is replaced by a soft and oily one.—*Cor. Michigan Farmer.*

Horticultural.

The Garden.

This is the season for transplanting evergreens, and although the season is late, the sooner such operations are completed the better. Planting deciduous trees, if not already done, had better be deferred till the fall. Too much care cannot be exercised in preparing ground for planting, and in finishing the operation in a neat and workmanlike manner. The ground should be deeply dug in the fall—if trenched two feet deep all the better—and the planting should be proceeded with as soon as the soil is dry and the weather warm. By carefully attending to such matters trees will not only live, but generally will thrive and grow with a rapidity truly astonishing, as compared with the disasters and slow progress of others less liberally and skilfully treated. The habits of trees should be studied in adapting them to soils, exposure, &c. Among evergreens, as a general rule, pines will flourish in a dry, sandy soil; the spruce requires a medium condition in relation to moisture, while the family of firs will luxuriate in somewhat sheltered and damper situations. In dry weather, especially when trees are several days out of the ground before planted, it is an excellent practice to puddle the roots, which can readily be done by plunging them into a mixture of cowdung and water, a portion of which will adhere to them, and keep them moist. Avoid planting too deep, and throw in some fine soil to fill up the interstices between the roots, tread the soil firmly, especially in dry weather. Mulching newly planted trees acts beneficially as a protection against the drought of summer, and the frosts of winter. These suggestions are of general application; but in case of choice fruit trees and flowering shrubs, they are of indispensible necessity. It is for want of proper attention that so many failures in planting have to be annually deplored.

Roses intended for removal, which in the ever blooming kinds, as Tea, China, Bourbon. &c, is occasionally advisable, should now be moved without delay, and pruned back considerably. This is the season for selecting bedding-plants; those of a dwarf and stocky appearance are to be preferred and, that have been somewhat hardened by occasional out of door exposure, when admissible. Box may now be planted, and the edging carefully cut, which gives it a pleasing appearance. Florist's flowers should be attended to as forming a source of beauty and enjoyment. Auriculas, carnations, pansies, polyanthus, phlox, &c., are easily cultivated, and impart much beauty to the garden. Gladiolus are getting popular, and may now be set out.

Not a day should be lost in getting in the principal crops of the garden; some of the earlier crops were sown last month. It is not, however, too late, in this backward season, to catch up work that has been neglected. In this climate the most productive garden crops are not frequently put in the ground before the beginning of May. Much, however depends, as we have observed in previous numbers, not on the particular time of sowing alone, but also on the suitable condition of the ground, and the temperature of the atmosphere.

Floriculture in Spring.

[The following paper was recently read before a meeting of the Hamilton Horticultural Club, by Mr. George Laing, Landscape Gardener, of that city.]

The Winter has passed away—John Frost, the fell destroying enemy of the Florist, is about to take his departure for a season. Spring time and Summer are at hand—gardeners and amateurs must arouse from their lethargy and be up and doing. Clean, dress, and roll the grass in the parterres. Soil and dig the flower beds—make all ready for the bedding season.

In writing on this subject I shall endeavour very briefly to state whatever may occur to my mind, confining myself principally to the varieties cultivated in this locality, and, as I proceed, introduce anything new I may think of, with a few remarks on the nature, habits, and culture of the plants.

If not already done, (say 1st April,) sow tender annuals in a hot bed or in pots or boxes, that can be placed in a vinery or any other suitable place under glass. Increase the plant stock by propagation—procure from the nurseries all the new Verbenas, Scarlet Geraniums, Heliotropes, Petunias, Carnations, Pinks, Hollyhocks and Dahlias, &c., all which are now very plentiful and so cheap that no one who has the desire need want them. Study to have all in readiness and good order by the time they are

wanted for planting. Consider well in arranging the beds, the nature and habits of the plants, colour of flower, time and duration of flowering, aspects, light and shade, so as to secure a pleasing effect and expression of purpose. The verbena, for a number of years has attracted the attention of Florists in this country and in Europe, and has been brought to great perfection; its fine branching habits and adhesive tendency to the ground, combined with its hardiness and numerous diversified colours, entitle it to a high station in the first order of bedding plants.

The verbena family is numerous and highly titled, but to approach its many noble names at present would be tedious; I shall therefore content myself by noting a few only:

Domvilliana—rich blush purple, large white eye; superb.

Miss Breeze—fine violet purple or crimson, with yellow eye.

Cynthia—bright vermillion, crimson shade, with large eye.

Etonia—rich indigo purple, large white eye, profuse bloomer.

Lady Seymour—deep rose purple, large white eye.

Lady Palmerston—fine blue, large white eye.

Agnes—violet purple.

Brilliant DeVaise—fine crimson scarlet, excellent bedder.

Celestial—rosy pink, immense truss.

Charles Dickens—rosy lilac.

Geant des Batailles — deep rich shaded crimson, one of the best.

General Simpson—large crimson, fine.

Imperatrice Elizabeth—violet rose, striped with white foliage.

Souvenir—rosy lilac, lemon eye, large truss.

Eastern Beauty—rich deep salmon rose, large lemon eye, fine.

Sir Joseph Paxton—light rosy red, large lemon eye.

King of Sardinia—fine scarlet.

Magnificent—fine large purple.

Madame Abbot—fine maroon.

Madame Lamonier—Satin rose, with clear white stripes.

Mrs. Woodruff—one of the finest scarlets in cultivation.

Mrs. Holford—white fine large portals.

Phenomena—deep crimson scarlet.

Tranby—rosy purple.

The verbena is a very strong feeder, and requires a rich, free, soil; it is worthy of remark that on such a soil the flowers and truss are full and perfect,—whereas on tenacious soils, they are in general irregular and very imperfect.

Heliotropiums are much favoured as bedding plants; their fragrance alone is a great inducement to their cultivation; many of the varieties are highly worthy of attention; such as Rine des Heliotrope, Souvenir de Siege, Beauty of the Boudoir, and Louis Faircliff—they like a free rich soil.

Petunias are much of the same habit as the former, and require much about the same treatment. There are some very fine new double varieties of this plant, two I observed in Rosedale nursery last year, Madame Mielleres and Double White and Van Houtte purple, they are very beautiful, and have a very rich fragrance, the many colours in the numerous single varieties is very worthy of attention.

Scarlet Geraniums, or those of that class, are many; much has been done of late years in hybridization; numerous excellent varieties are now produced, beautiful in flower and foliage. The brilliancy of these flowers and continuous flowering habits during the summer and autumn months render them highly worthy of cultivation. They are free growers, and like a rich sandy soil.

Pot Roses, as bedding plants, seem not to have as yet commanded attention here; this I think is to be regretted. What can be more beautiful than a bed of roses. The most suitable varieties for this purpose are the Chinese, Noisettes, Leas, and Hybrid Perpetuals. Have the convexity of the bed formed according to its size, plunge the strongest growing kinds in the centre and the lesser gradually outwards to the edge; the varieties to be well mixed; the pots plunged at least one inch over the rim; as they grow keep intermixing them, and pressing them down; in this manner they form a beautiful mass that is very much to be admired.

Carnations and Pinks,—The Carnation is not considered a very good bedding plant, it is much better adapted for border and pot culture, but I cannot, in justice, pass it by without noticing it as highly worthy of more general attention. I can well recollect, that about twenty or twenty-five years ago the Auricula, Polyanthus, and Carnation attracted the attention of gardeners and florists equally as much as the Prima Donnas of the present day; I am glad to observe that they are again becoming more noticed. But to return to the Carnation as a border and pot plant,—prepare a compost of two-thirds good loam, one-third old hot-bed manure, with a good mixture of sharp sand, add a very little of newly slacked lime, get all well incorporated six months previous to use, lay say twelve inches of this compost on a well-sheltered and drained border, plant 18 inches or two feet apart, either singly or in patches of three plants. For pot culture let the layers of last year be potted off into full sized pots, say of eight or nine inches diameter, in which they are to perfect their flowers, have the pots well drained, watch and destroy all the grubs, worms, and slugs, attend to watering and sticking in both ways, and all will progress favourably and flower abundantly.

Dahlias. If not down for propagation no time should be lost in placing them in the front, or back of a melon or cucumber frame, or a bed prepared for the purpose. As the shoots advance to two or three inches take them off and

put them into small pots in a mixture of loose mould and sand. Give the pots a good watering, and insert the cutting, just as far as will enable them to stand, then plunge them into a frame with a good sharp bottom heat; shade the frame and keep it close shut up, unless to inspect the plants; attend to watering, but be careful not to water over the leaves; in the course of twelve or fourteen days they will be sufficiently rooted so as to be shifted into larger pots in which they may remain until hardened, and planted out, about the end of May or the beginning of June. To secure success have the bed or border well prepared, and in a place to embrace the morning and afternoon sun, and to be shaded in mid day. Many of the best Dahlia growers in England and Scotland prepare their borders in the fall. They manure very strongly with cow dung or night soil; they ridge up the border to the depth of twenty inches or two feet, in which state it remains during the winter; in spring, before planting, it is levelled down, and a good layer of fresh loamy soil is laid on and all well dug up and planted, then sticked and attended to. It has been affirmed that night-soil is preferable to any other manure for the Dahlia; it is considered more exhilerating for growth, and has the property of producing clear fine colours in the blooms.

Shrubby Calceolarias are very good bedding plants, either by themselves or grouped amongst others, but they seem not to be much favoured as such in this quarter. If shaded from the strong mid-day sun, there is no doubt of their doing well, and forming a very beautiful bed. Fairy Queen, Kentish Hero Kagii, Minnie, Gem, Sultan, and Wellington Hero, are all very suitable varieties.

Lantunas.—Many of the varieties of this beautiful plant are excellent bedders, such as Alba nana, Fulgens, Delicata, Delatisima, and Eclatant; they may be planted out or plunged. If in the latter way, it will be found an advantage to puncture a few holes in the side of the pots, taking care not to break them. This method is very commendable for all pot plunged plants, and if the puncturing be carefully done, the pot is not destroyed.

A good collection of Hollyhocks should always be at command; they are very suitable for side borders and clumps, &c.

Tritonias, Gladioluses, and Liliums form good beds, as also Alstroemerias, Mimulas, and Lobelias, Dianthus Heddewegii, D. Laciniatus, D. Chinensis Nana, D. Heddewegii Imperialis, Phlox Drammondii, Balsams, Stocks, Asters, Onothera Rosea, Zinnia Elegans, Gazania Splendens, Tom Thumb, Nasturtium Feverfew D'ble White, Pansies, Ageratum Mexicanum, Cuphea Placyntra, and many others that I might notice, all suitable for bedding purposes.

Nothing can be more pleasing to look upon than a well-arranged Parterre or Flower Garden. It is both pleasing to the eye and instructive to the mind. The ideas conveyed are of the noblest kind. The effect depends upon the arrangement, and the arrangement on the judgment of the gardener; therefore it is highly necessary that he consider the matter well before he begins.

Grouped planting of all kinds, when judiciously carried out, is very ornamental, particularly so in flower-beds. As a completion of these ideas, I notice the following varieties as suited for four beds, but in all cases it is to be supposed that the operator may or should suit his own taste as to plants and mixture of colors.

Bed 1st.—Glandiolus Gandavenses—green; Lotus Negracanas—blue; Geranium—scarlet; Lantuna Wingii—pink; Phlox Drummondii—white; Dianthus Heddewegii—cream; Verbena, Mrs. Woodruff—scarlet.

Bed 2nd.—Canna Indica—blue scarlet; Heliotropium Clara—blue; Feverfew double white—white; TomThumb Geranium—green; Ageratum Mexicanum—blue; Tom Thumb Nasturtium—yellow; Verbena Imperatrice Eb—rose.

Bed 3rd.—Dielytra Spectabilis—rose; Lantuna Albanana—white; Lotus lutens—yellow; Petunia Houttii—pink; Tom Thumb Geranium—green; Nurimbargii Gracilis—pink; Verbena Tranby—rose.

Bed 4th.—Tritonia Maria—yellow; Balsams—blue; Feverfew Do. white—white; Cacalia, Coccinea—scarlet; Fhlox Drummondii—purple; Tom Thumb Nasturtium—yellow; Lobelia rosea—rose.

And now in conclusion, a few hints towards ourselves, as members of a Horticultural club, may not I trust be out of place. Old and young, all must *read, think, write,* work and be diligent; we have all much to learn. We have weekly in this club two very excellent periodicals, let us peruse them, the *Gardeners' Monthly,* the *Horticulturist,* and the *Agriculturist,* a Canadian publicatian, which we ought as a club to patronise, and there are many others of the kind which give the hints and information we need. We cannot, we must not stand still; we are beings possessed with the ordinary gifts of nature, and let us exercise them and improve so as to be useful to ourselves and in the world in which we live.

Veterinary.

Hog's Lard for Horses.—Horses that have accidentally eaten largely of wheat, sometimes die from inflammation of the intestines. It is recommended by a correspondent of the *Mark Lane Express.* that as soon as possible after the discovery of the accident, the animal be given from three quarters to one pound of lard; which being cut into pieces of the ordinary size of a horseball and wrapped in paper, is easily administered. This is said to be more efficacious in such cases than castor oil, which is usually

prescribed by veterinaries. In small quantities lard is is an excellent laxative for horses; and to those which reject mashes preparatory to physic, or in the event of an accident requiring an immediate dose of physic: also in preference to giving strong doses of aloes to horses whose systems are with difficulty affected by purgatives, by giving from a quarter to half a pound of lard two or three hours before a physic ball, the results will be attended with success.

Cure for Glanders.—Spencer R. Paneck, in the *Cotton Planter*, gives the following account of the way in which he cured the glanders He says:—"My horse was a valuable one, and had had the glanders some twelve or eighteen months, and so badly did he have it that I offered to sell him for 15 dollars. He could be heard to breathe from fifty to one hundred yards every breath; indeed we could not sleep so distressing was his breathing, the stable being close by. I determined to kill or cure—so for experiment: on Monday I gave him as much dry calomel as would lie on a ten cent piece; on Wednesday I did the same; on Friday I gave it him again; on Saturday he could not bite a pumpkin; on Sabbath morning I looked in his trough and found at least one quart of old mattery scales, with a mixture of matter all in a lump. From that time he breathed easy, and never was troubled again with glanders—it was a perfect cure. I worked him in my buggy for two years after, and traded him as a sound horse to a neighbor, who was familiar with his disease all the time he had it. He was slightly salivated, was as good after as before. A neighbor tried the remedy with equal success."

Transactions.

Abstract of Report of Agricultural Societies received in the year 1860.

(*Continued from page* 253.)

TOWNSHIP BRANCHES (WEST MIDDLESEX.)

Adelaide.—Fifty-nine members; amount of subscriptions, $63.50; balance from previous year, $9.05; share of public grant, $45.08; total received $117.63. Amount paid in premiums, $92.50; "Agriculturist," $6.00; expenses, $17.62; balance in Treasurer's hands, $1.51.—The Directors give some interesting information and statistics in their report but being to a considerable extent a repetition of that contained in the report of the County Society it is not here inserted.

Delaware.—Fifty seven members; amount of subscriptions, $72.54; balance from previous year, $17.55; public grant, $40.09; total received, $130.18. Paid in premiums, $93.25; expenses, $15.13; balance in Treasurer's hands, $21.80.

Extracts from Report.

The grain crops in the Township of Delaware, with the exception of the fall wheat, of which very little was sown, and that little almost completely destroyed by the late frosts in June, were of an average quantity. The hay crop was very heavy on the River flats but was much under the average in other parts of the township; the root crops were much above the average. Flax was grown to a small extent in the township, and from all accounts answered admirably,—from the hopes held out of securing a ready market for any amount of the article, we should strongly advise the cultivation of it to a great extent the next season. particularly as growing wheat in any great quantity has proved within the last few years a very precarious undertaking on account of the ravages committed by the wheat midge.

Although the good work of improved tillage is progressing so rapidly in the township, we nevertheless beg to offer a few remarks on a subject which should be the *ne plus ultra* of every agriculturist, we have reference to the thorough drainage of the soil; it is doubtless the very foundation of *profitable* farming in any country, and particularly in this, as from the severity of the winter the farmer is prevented doing anything in the way of tillage until very late in the spring, and is then called on to plow, harrow, and sow, at a moment's notice as it were, and in such a hurried manner that thousands of acres are sown in a state totally unfit for the reception of the seed, the soil being so thoroughly soaked by the heavy rains in the spring, and delaying operations, until the land shall be in a fit state being altogether out of the question, on account of the great amount of work to be done in so short a time. Now it must be evident to all, that were the land thoroughly drained, either by under or open drains, it would be in a proper state of cultivation immediately on the breaking up of the winter, and the continual filtering through of the surface water to the drains below opens, as it were, the pores of the soil, and renders it much *easier* to till, consequently a great saving of time, labor and expense is effected. Although the subject is almost inexhaustable in detail, we cannot at present enter more deeply into it;

we think we have given sufficient reasons why the land *should* be thoroughly drained, and as we can speak from practical experience of good and permanent under-drains being made with poles, the materials are therefore within the reach and means of every farmer, and we see no means why it *cannot* be done. If we wish for evidence as to the great increase in the quantity and quality, of all descriptions of crops, obtained by the thorough carrying out of the system, we have merely to look to Great Britain. If we take Scotland alone, (the very hotbed of good farming,) we have accurate information of some very large tracts of land, which previous to being thoroughly underdrained scarcely produced from 10 to 12 bushels of wheat to the acre, and now from the adoption of the system produce from 40 to 50.

Lobo.—Fifty-nine members; subscriptions $55; balance from previous year, $5.11; share of grant, $40 09; sundries, $6. 50; total received, $106.70. Paid in premiums $61.35; expenses and sundries, $45.07; balance 28c.

Metcalfe.—One hundred and seven members; amount of subscriptions, $138.75; balance from 1858, $32.30; public grant $98 48; received on account of stock, &c, $26; total received, $295.53. Paid for purchase and expenses keeping bulls and other stock $233; other expenses, $17; balance in hand, $45.53. The Directors say: "It is with pleasure we notice the great improvement in cattle and other farm stock since the formation of the society, and also the great increase of the culture of root crops, especially turnips, some farmers cultivating ten or fifteen acres, and finding them very profitable for fattening and dairy purposes."

Mosa.—Fifty-seven members; amount of receipts, $82 93. Paid in premiums, $65.75; statement imperfect.

Williams.—Amount of subscriptions, $45.60; balance from previous year, $13.87; government grant, $30.02; total received, $89.49. Paid in premiums, $81.40; expenses $7.77; balance in hand, 32c.

NORFOLK.

County Society.—One hundred and fifty two members; amount of subscriptions, $152; balance from previous year, $246.84; deposited by townsips branches, $306; government grant, $599.96; entrance fees, &c., at show, $128,85; total receipts, $1433.65. Paid Townships Branches, $459; paid in premiums, $413.50; expenses, $134.28, balance in Treasurer's hands, $426.87.

Extracts from Report.

An increased interest in agricultural pursuits appears manifest, and a gradual advancement is apparent; in proof of which you are cited to the well tilled fields, the luxuriant crops of grass, cereals and vegetables, and to the beautiful and well-fed animals, which have superseded the formerly careless and partial cultivation of the soil, and the ill-shapen and worse fed farm stock.

There is, without doubt, a wide spread spirit of emulation among the agricultural and mechanical population of the County, which exhibits itself at our annual fairs. The greatly increased number of entries, together with the excellence of the animals and articles exhibited on these occasions, affords conclusive evidence that the farmers of this county are not only striving to excel each other, but that they are also determined not to be beaten by the Agriculturists of other Counties in this our noble Province.

The variety and productivenss of our soils —the numerous large creeks and streamlets— the abundance and variety of timber in our forests – having Lake Eri for a natural outlet for our products, – these, with numerous other advantages, fostered by the enterprise of its inhabitants, argue a successful and glorious future for "Glorious old Norfolk."

Having made these general observations, your committee will proceed to such particulars as may prove interesting and profitable to the farming and mechanical community generally.

First,—As to the character of the soil: In the eastern portions of the Townships of Townsend and Woodhouse, the soil is generally clay or loam, varying in its components, and resting upon a lime stone stratum of various degrees of depth from the surface, and jutting out at the banks, and forming the bottoms of most of the creeks. This soil is well adapted to grazing, as well as to the production of wheat, oats, barley and peas. It is, however, more subject to rust and to the ravages of the midge than soils of a lighter nature. Roots and vegetables succeed well, with the drawback of occasional rot to the potato crop. The timber on this soil is principally Maple, Beech, Ash, Elm and Basswood, with large White Pine and White Oak interspersed. The western portions of these townships have a more silicious soil, varying also in its components. In some parts the subsoil is clay, in others a

grey sand. On the whole it is a productive soil, adapted to the growth of Wheat, Indian Corn, Oats and Buckwheat; and with proper management produces the finest and most healthy roots and vegetables. The timber is mainly white and black Oak, with chestnut and occasional clumps of hard wood and dwarf pine. The soil in the south eastern portion of the township of Windham is of a loamy nature, producing abundant crops of all grains, roots,and vegetables,generally cultivated. The soil in the north eastern portion is a gravelly loam inclining to sand—the same may be said of the south western part. These soils are not much affected by an excess of either wet or dry weather; neither do they heave with the frosts of winter, consequently they universally produce fair average crops of the very best sample. The north western portion possesses a clay soil, some seasons produciug abundant crops, at others these are materially affected by the frosts of winter and the droughts of summer. The interior of this township is covered with forests of prine, with large ceder and tamarac swamps.

The Township of Charlottville has generally a light sandy soil, although there are many farms of most desirable fertility. Owing to the diversified nature of the soil, the crops are various—some farms producing the largest crops of Wheat and Clover, others producing the finest crops of Indian Corn, and Buckwheat; while all produce Oats, Barley, Peas, Potatos and Turnips in abundance. There is almost every variety of timber indiguous to such oils.

The Township of Walsingham is noted for her lumbering capabilities. A large portion of this township was once covered with the finest quality of White Pine, which is fast being converted into timber and lumber for the American market. But few years will suffice to sweep away these mighty and beautiful forests, and leave nothing but unsightly stumps and refuse timber. That portion of this township bordering on the Long Point Bay, and Lake Erie, is possessed of a soil varying from a black vegetable mould of a loose friable nature, to clay of the most tenacious quality. The crops of Barley, Oats, Peas and Wheat are of the most luxuriant kind. The pasturage is abundant, Timothy and clover luxuriate here, and grow to the hearts content of the most avaracious of our species.

The Township of Houghton is a beautiful gore of land, the base of which lies along Lake Erie. The soil is rich and productive, much like that of Walsingham of which we have been speaking—producing the same variety of crops, in the same abundance. The timber is Maple, Beech, Ash and Elm, with a large supply of Pine and some Walnut.

Middleton is considered rather unproductive, owing to the light sandy nature of the soil; although there are some of the best farms and the best farmers in this township, of any in the county. Pine is the prevailing timber, consequently a great deal of lumbering is carried on here.

As to the average productiveness of the soils your directors are of the opinion, that aside from extraordinary seasons of sterility, the average of wheat per acre is 20 bushels, of Barley and Oats 30 bushels, of Indian Corn 50 bushels, of Peas 30 bushels, of Buckwheat 25 bushels, of potatos 150 bushels, of Rutabagas 300 bushels, of Carrot 400 bushels, Timothy Hay 1½ tons, Cover Hay 1½ tons. Millet is cultivated to some little exten, and succeeds well in our warm soils, producing from 2 to 3 tons per acre of the most palatable and nutritious fodder, and from 20 to 30 bushels of seed.

The wide spread calamity of June last, fell heavily upon this county. Our wheat crop, the staple production of our locality, from presenting the most promising appearance witnessed in many years, was stricken down by the frosts; and instead of maturing and producing an abundant harvest, remained the blackened and seared monument of disappointed hopes. Never within the recollection of man was the devastation so fatal, so universal.

Indian Corn was also cut down, and never recovered. Much was replanted; but owing to the coldness of the Summer and Autumn, very little came to maturity. Many farmers sowed their corn ground to turnips; and the consequence was that we never had such an abundant root crop before; and which is now supplying to a great extent the falling off in other crops. Peas, Oats and barley were not injured, and yielded abundantly. Timothy meadows suffered much, and did not recover. Clover meadows, however, revived after the frosts and produced an average crop. On the whole, we find ourselves in much better circumstances than our fears would allow us to

anticipate; and no doubt this calamity will make us wiser, and more provident for the future, and induce us to cultivate a greater variety of farm crops, instead of depending mainly on the wheat crop.

In regard to the improvement of stock, your Board is compelled to state that the improvement is not so universal as they would like to see, or as to compare favourably with the other Counties; although there are some excellent specimens of improved breeds of cattle, sheep, and hogs, owned by a few enterprising farmers, who are not only benefitted themselves by these fine animals, but their neighbours also are greatly benefited thereby. The preference given to the most improved and best bred animals is quite diversified—some preferring the large and beautifully developed Durhams, while others fancy the smaller and symmetrical Devons. The Ayrshires, as milkers, deserve much praise, while others contend that the natives are the cattle for the country *par excellence*, and surpass all other breeds in profit, if not in appearance. The more generally received opinion is that the crosses of the best blooded animals with the natives produce the most valuable animals for the mass of farmers and graziers. On the whole it is greatly desirable to see many more of those noble, beautiful and useful improved breeds introduced into this country. The Leicesters are the most approved, as well as the most numerous breed of sheep reared with us. The subject of rearing the fine wooled sheep is beginning to engage the attention of some of our breeders; and there is no doubt that, from the nature of soils and pasturage, these animals may be made profitable. As to mutton sheep, the South Downs stand unrivalled, and the Cotswold, though but recently introduced, have many advocates.

The experiments which have been made in breeding and feeding animals, which have come within the knowledge of your Board, are but few; these few, however, go to support the generally received opinion of the best breeders and feeders, that the most profitable way to rear farm stock is by judicious and abundant feeding, to induce a constant growth and healthy development of the animal in all its parts. The most economical system of feeding, is to cut all the hay, straw, and cornstalks which are fed, and mix therewith a small quantity of some kind of chopped grain. Chopped Indian corn mixed with hay, with an occasional feed of roots when the weather is not too severe, is found to be the best food for fattening horned cattle. Barley, oats or buckwheat may supply the place of corn in the mixture.

For fattening sheep, the pea crop, where it can be raised in abundance, seems to be the most desirable; and the most profitable manner of feeding is without threshing, as the straw and peas fed together conduce more to the health of the animal than clean peas. Indian corn and oats ground, and fed to fattening sheep, are very nutricious, and prepare them for market in a very short time. Cooked food, whether it be grain, roots, or vegetables, is allowed to be the best and most economical for fattening hogs.

The subject of drainage has not engaged the attention of agriculturists here; as owing to the undulating surface of our land, and the porous nature of the subsoils, drainage would not be so beneficial as in other places: nevertheless, your Board are of opinion that many of our farms might be rendered much more productive by adopting a thorough system of drainage.

Your Board have much pleasure in referring to the great and useful improvements which have been made in agricultual implements. The manner of harvesting our grain and hay crops was altogether the most laborious part of farm labor. That severe labor is now mostly superseded by Reapers and Mowers; thereby greatly facilitating the labor, and securing the crop with less waste and liability to damage from bad weather. Great improvements have been made in that most useful implement, the plough. Different varieties of pattern, adapted to the different requirements of the ploughman, and the different nature of the soils, are now manufactured, of good material, and possessing all the advantages of mechanical skill. Cultivators, and the most approved harrows are also made here, and are in general use by our farmers. Seed drills of various sizes, and for various purposes are made by our mechanics, and are in very general use: in short, our farmers seem inclined to avail themselves of the advantages of all the useful labor-saving machines within their reach.

The cultivation of fruit-trees is very general, and up to the winter of 1856 was prosperous and successful; but during that winter the more tender varieties, as the peach, plum, and finer sorts of cherries were al destroyed.

Apples and pears were greatly damaged; and from that time to the present, there has been a constant decay and falling off; so that we may safely assert that in number there is from one third to one half less than formerly, with a still decaying tendency; and the probability is, that our entire orchards will have to be renewed by young and healthy trees. This country is well adapted to the growth of fruit, especially along Lake Erie and the Long Point Bay. The fruit crop was abundant and of excellent quality for many years previous to the time of which we have spoken; since then there has been a great failure both in quantity and qua ity.

Your Board would suggest some improvement in the management and development of the capabilities of our soils; and these suggestions will be drawn from the experience of men of science and practice. It is a fact which needs only to be mentioned, that the different nature of soils require different treatment, in order to make them productive. Soils which are loose and friable freely admit the influence of heat and air, and only require fertilizers, with a moderate degree of tillage to bring out their capabilities; while soils of a more tenacious nature require a very great degree of tillage in order to loosen and pulverize them, and render them susceptible of absorbing warmth and moisture. Soils of a sandy nature require constant renovation, else the vegetable ingredients which they contain are soon absorbed, and the soil becomes sterile and unproductive. All soils require food in order to restore their exhausted energies, after having produced crops; and here the knowledge and skil of the farmer will exhibit itself. From the fact that soils require food suited to their natures, the farmer must know something of the nature of the soils in order to know what kind of nourishment they re quire, to supply the particular ingredients needed; and after all it will be found that a judicious rotation of crops is the only way to develop their resources. With us the clover crop is the farmer's sheet anchor, as a renovator. It is also the cheapest and most efficient manure to any great extent within our reach. In addition to this it is our interest to make all the manure we can from our yards and stable. It is a fact patent to all, that in this respect we are shamefully negligent. We allow the liquid and solid excrements of our animals to go to waste, instead of preserving and applying them to our fields. We have trusted too long to the strength and fertility of our virgin soils. The effects of this negligence are every day becoming more apparent; and unless there is a speedy reformation, barrenness and blasted hopes will be written on our once fertile fields, and it will take many years of labor, attended with immense expense, to restore them to their wonted fertility. Your Board dwell more earnestly upon this part of their report, because they cannot feel indifferent to the fact that unless we at once commence a thorough system of manuring there will be a constant depreciation of farm crops until we shall not be able to supply the demands upon our productions; and consequent destitution and suffering must follow.

We fear that our brother farmers do not as they should avail themselves of the necessary and desirable information in regard to what has been said in the foregoing report—and of matters and things in which they are vitally interested; therefore we would cordially and respectfully request, that as you desire to be successful in your occupation, and desire to make your sons and your daughters useful members of society, that you should gain all the knowledge you possibly can pertaining to the profession in which you are engaged. Agricultural books and periodicals are abundant and excellent, and aside from your general information, it is as important to your success as a Farmer that you read those books and periodicals, as it is to the success of the Physician that he reads books and periodicals on medicine, surgery, &c., or to the Lawyer that he studies books relating to his particular profession. It is also our duty to make our buildings as comfortable and convenient as possible, and to make their surroundings beautiful and attractive; remembering that a rustic arbor, a clump of evergreens, a trailing honeysuckle, or arbor vitæ, a border of roses or violets will produce the most happyfying influence on the minds of our children; will lead them to see and admire their Creator in the loveliness of His works. Home influences have more to do in forming the character of our children, than all other influences combined. If their minds are properly imbued with a knowledge of their social duties and moral obligations while under the parental roof, you may safely commit them to the vicissitudes of life; although they may for a time seem wayward, yet be assured that the hallowed influences of Christian homes will never be effaced from their memory,—the

kind admonitions of a dear mother, and the affectionate regards of a sweet sister, will be shields of protection in times of temptation and danger.

Your Board are very sensibly impressed with the fact that many of our sons are leaving the time honored profession of Agriculture to seek employment elsewhere, under the impression that nought but toil and obscurity attend the farmer's life. Now we fear that the cause of this may be attributed to a want of system and skill in our farm operations—too much drudgery and not enough intellectual enjoyment—unsightly buildings instead of neat substantial ones having an air of beauty around them—half starved cattle, and half starved crops, instead of sleek and beautiful animals, and well tilled and productive fields—old fences and broken down gates, with the pigs in the potatoes, the horses in the meadow, and the cows in the wheatfield, with the oft repeated cry of "run, boys, run!"—is it a wonder that they *do run* away from such scenes, and seek a place where order and harmony dwell?

TOWNSHIP BRANCHES.

Charlottville.—Amount of subscription, $42; balance from previous year, $400,-66; public grant, $29; received from Woodhouse Society in aid of joint exhibition, $85; sundries, $16 34; total receipts, $573.00. Paid in premiums, $290.75; expenses, $3.40; balance in Treasurer's hands, $278,85.

Townsend.—One hundred members; amount of subscriptions received, $65; balance from previous year, $20.44; public grant, $50; total received, $135.44. Paid in premiums, $121.25; expenses, &c., $35.95; balance due Treasurer, $21.26.

Walsingham.—Forty-one members; subscriptions, $43; share of public grant, $22; total received, $65. Paid in premiums, $36.75; balance in Treasurer's hands, $21.66.

Extracts from Report.

The directors take great pleasure in reporting the healthy porgress of agriculture in this Township. They have came to the conclusion that for societies to hold stock is a bad system and is not found to be re-munerative, as in a very short time it costs the price of the animals to keep them, and gives much better satisfaction to invest all the means for prizes and plowing matches, thus by giving large prizes inducing persons to produce good stock and implements.

We also think our present system of giving premiums to small lots of grain and vegetables is not so encouraging to agriculture as would be the case if prizes were awarded to the weight or measure of a certain area of land i.e., have the growing crops inspected. As a bushel of vegetables may take a prize, while the lot they were selected from would be very poor, and so with grains. Under this system farmers are not induced to compete for prizes when they plant or sow, which is far the most important time, but under a better system they would be induced to get the best seed and prepare the land properly.

The prevailing character of the soil in this Township is clay. The average of wheat per acre this year is low, being damaged by frost and weavel. Cleared lands are valued at about $30 per acre.

There has been a great increase in the production of roots, the result of which supplies our markets much more plentifully with fresh butter during the winter.

Windham.—Forty-five members; subscriptions, $45; balance from 1858, $17; grant, $22.50; total, $84.50. Paid in premiums, $80; incidental expenses, $4.50.

Woodhouse.—Eighty-one members; amount of subscriptions received, $63; balance from previous year, $230.18; public grant, $31.50; total received, $324.68. Paid in premiums, $205; expenses, $16.20; balance in hand, $103.48.

EAST NORTHUMBELAND.

County Society.—Eighty-six members; subscriptions, $86; balance from previous year, $78.68; deposited by Township Branches, $247; government grant, $479.98; received from sale of sheep, $136.25; sundries $8.84; total received, $1036.75. Paid for copies of *Agriculturist* $40.50; paid Townships Branches, $535.52; Paid for purchase of sheep and pigs of improved breeds, $225; paid in premiums, 226.02; expenses, $5.87; balance in had, $2.84.

TOWNSHIP BRANCHES.

Brighton.—Fifty-five members; subscriptions, $57; balance on hand from previous year, $148.84; public grant, $62.38; received for seeds sold, $128.30; total receipts, $396.52. Paid for seeds, $128.30; paid in premiums, $106.15; expenses, $25.25; balance in treasurer's hands, $136.82.

Cramahe.—Forty-four members; subscriptions, $46; balance from previous year,

$6.84; public grant, $45.40; receipts at show $4.75; total received, $102.99. Paid in premiums, $77.60; expenses, $20.02; balance in hands, $5 37.

Murray.—Forty-eight members; amount of subscriptions, $48.50; balance from 1858, $21.20; government grant, $54.25; received for seed wheat sold, $16.19; total received, $140.14. Paid seed wheat and charges, $16.00; paid in premiums, $78.62; expenses, $9.45; balance in treasurers's hands, $36.-07.

Percy.—Sixty-two members; subscriptions, $65; balance from previous year, $27.-32; government grant, $73.08; total receipts, $165.40. Paid in premiums at show and ploughing match, $127.21; expenses, $21 64 balance in hand, $16.55.

Seymour.—Forty-seven members; subscriptions, $47; balance on hand from 1858, $15.84; public grant, $46.87; total received, $109,71. Paid in premiums, $82; expenses, $13.71, balance in hand, $14.

WEST NORTHUMBERLAND.

County Society. One-hundred-and-eighty members; subscriptions, $109; deposited by township branches, $172; government grant, $479.98; sundries, $10 50; total receipts, $771,48. Paid balance due treasurer from 1858, $41,20; paid township societies, $459.97; paid premiums, $141.25; copies of *Agriculturist*, $70,35; expenses, $39.15; balance in treasurer's hands, $19.56.

TOWNSHIP BRANCHES.

Haldimand.—Sixty members; subscriptions, $60; balance from previous year, $133.-02; public grant, $66.98; receipts at show, $32; received on account of stock sold, etc., $97.45; total received, $389.45. Paid in premiums, $171,80; Paid in purchase of stock and expenses, $120.52; balance in hand, $97.13.

Hamilton.—One hundred and thirty-two members; subscriptions, $132; balance from 1859, $58.36; share of public grant, $221; receipts at show, $23; total received, $434.-36. Paid in premiums, $263.50; paid county society, $10; expenses, $112.50; balance in treasurer's hands, $48.36.

NORTH ONTARIO.

County Society. — One hundred and twenty members; subscriptions, $120; balance from previous year, $71.62; deposited by township branches, $303; government grant, $479.98; receipts at show, $82.35; total received, $1056.95. Paid township branches, $590.98; premiums, $242; expenses, $215.58: balance in hand, $8.39.

TOWNSHIP BRANCHES.

Brock.—Forty-eight members; subscriptions, $50; balance from 1858, $25.81; share of public grant, $45.75; total received $121.-56. Paid in premiums, $103.50; expenses, $11.70; balance in treasurer's hands, $6.36.

Reach.—One hundred and twenty-two members; subscriptions, $122; balance from 1858, $103.82; government grant, $116.10; entry fees, etc., $24; total receipts. $365.92. Paid in premiums at shows and ploughing match, $289.25; expenses and sundries, $45; balance in treasurer's hands, $31.67.

Uxbridge.—Ninety-three members; subscriptions, $93; balance from previous year, $55.47; share of public grant, $88,65; receipts at show, $18; total, $255.12. Paid in premiums, $189.75; expenses, $12.76; balance in treasurer's hands, $52.61.

Thorah.—No report from this society. Shares of public grant received through county society, $38.00.

SOUTH ONTARIO.

County Society. — One hundred and sixty-four members; amount of subscriptions, $180; balance from previous year, $123.34; deposited by township branches, $399.50; government grant, $479.98; receipts of show, $62.35; donations, $20; total received, $1265.17. Paid township branches, $687,-48; premiums, $438.25; expenses, $138.81; balance in hand 63cts.

Extracts from Report.

South Ontario, situated on the north shore of Lake Ontario, extending about 18 miles from east to west, and about 13 from south to north, from the Lake Shore to the "Ridges," watered by the Oshawa Creek, Lynde's Creek, Duffin's Creek and the Rouge, with their numerous tributaries, affording a large amount of water power with a soil, consisting chiefly of a fertile loamy clay, with some spots or ridges of a gravelly or sandy loam, resting on a clay subsoil; with the fertile Townships of North Ontario and Victoria in the rear; with Lake Ontario in front, with Whitby Harbor near the centre, Port Oshawa on the east, and Pickering Harbor on the west; and with

the Grand Trunk Railway running through it from east to west, with 5 stations within its borders; is pre-eminently adapted for agricultural, manufacturing and commercial purposes.

As the primeval forests were subdued and the lands became free from stumps, new and improved implements of husbandry were gradually introduced, either imported or manufactured at home by artizans who settled in the county, until we have now implements of the most improved kinds, such as ploughs, harrows, cultivators, rollers, reapers, mowers, threshing-machines, straw-cutters, etc. etc., manufactured in our midst or brought to our doors on reasonable terms.

The rude log house has given place to the comfortable frame, brick or stone dwelling of the farmer, amply and often elegantly furnished from the cabinet and upholstery shops in the neighboring town or village. The primitive barn has also given place to the large frame barn, with ranges of stables and cattle sheds, with cellar or root house for securing the root crops for winter and spring feeding. The fields have also undergone a similar change, being mostly laid out in a regular manner with a view to a more systematic rotation of crops, and the zigzag rail fence has in many cases given way to the straight post and board fence; and the shallow and superficial cultivation so common a few years ago, is fast giving place to a deep and thorough system of cultivation; much more care is bestowed on collecting and applying manure than formerly. The all important subject of draining is also engaging the attention of many of our farmers, but not to the extent we think its importance demands, as we believe thorough draining to be the great panacea for most of the ills that wheat is heir to, such as winter killing, rust, midge, etc., etc, Draining in this county has hitherto been conducted in too partial and superficial a manner, but still with good results to those who have attempted it; we are not aware of a single field in South Ontario that can be said to be thoroughly drained; There are now four or five brick-yards in the county where the manufacture of drain tiles has been commenced and it will be for the farming community to say whether they will be sustained or not; we are however fully convinced that on our stiff clay lands, nothing will add more to the profits of the farm, than a thorough system of draining, and a proper rotation of crops. The culture of root crops has been steadily increasing for some years past, with marked results in the improved appearance of the farm stock and fields.

The breeds of neat cattle, horses, and sheep, have been greatly improved by the importation of thorough bred animals, and by better system of feeding and housing them during the winter, which is amply repaid by the improved state of the animals, and in the quantity and quality of the manure produced for enriching the fields.

On the whole we believe that the march of agricultural improvement among us is onward in the right direction, and we confidently believe that when the next census is taken it will be found that South Ontario has not lagged behind her neighbors in this respect. We would however again urge the importance of a thorough system of draining, the adoption of a proper rotation of crops, avoiding consecutive crops of grain, particularly of wheat, on the same land; more attention to dairy husbandry, and the introduction of flax culture, all of which it is believed would add to the material interests of the farmer.

We would also call the attention of the farmer to the state of his wood lands, and remind him, that while in the early settlement of the county a war of extermination was waged against the primeval forest, the small remnants that are now left require his care and attention to preserve them from utter anihilation; and that much may be added to the beauty and comfort of our rural homes, by the judicious planting and rearing of forest and other trees and shrubs around them. We think also, that the subject of horticulture deserves more attention than it has yet received in this county.

Among the manufacturing establishments of the County, may be mentioned 26 mills, with from two to six run of stones each, engaged in the manufacture of flour and oatmeal, a large portion of the wheat grown in South and North Ontario and the western townships of Victoria being purchased in South Ontario, and manufactured into flour for exportation; a number of saw-mills engaged in the manufacture of lumber for home consumption and exportation; numerous establishment for wool-carding, cloth dressing, &c., affording excellent facilities for home manufacture, at several establishments woolen manufactures are carried on to a considerable extent; the establishment of Joseph Hall,

at Oshawa, employing from forty to fifty men, with the most improved machinery, driven by steam power, in the manufacture of threshing machines, plows, &c.; and of A. S. Whiting & Co., at the same place, employing about thirty men in the manufacture of scythes, hoes, forks, &c., they also use extensive machinery worked by steam power. There are also numerous small establishments throughout the County where agricultural implements of almost every description are manufactured. The cabinet manufactory of Fuller & Co., of Oshawa, employs about fifty hands, with a large amount of machinery driven by steam power; there are a number of cabinet and chair factories on a smaller scale, producing articles of every style of workmanship.

The merchants' shops in the towns and villages are well supplied with every description of goods, required for necessity, comfort, luxury or fashion; some of the merchants in Whitby and Oshawa import their goods direct from the British markets.

TOWNSHIP BRANCHES.

PICKERING.—One hundred and forty-one members; amount of subscriptions, $162.50; balance from previous year, $222.03; government grant, $107.05; receipts at show, $71.60; total received, $563.18. Paid premiums, $393.50; expenses, &c., $61.52; balance on hand, $108.16

WHITBY. — One hundred and eighteen members; amount of subscriptions, $127; balance from previous year, $133.74; government grant, $90.10; entries at shows, &c., $31.50; total received, $382.34. Paid premiums at shows and plowing match, $249.50; expenses, $34.97; balance in treasurer's hands, $77.87.

EAST WHITBY.—One hundred and sixteen members; subscriptions, $126; balance from 1858, $54.05; government grant, $90.83; total received, $270.88. Paid in premiums, $170.50; expenses, &c., $49.18; balance in treasurer's hands, $51.20.

Miscellaneous.

Wood Ashes.

The opinion has become quite prevalent, that leached wood ashes have nearly the same value as unleached. This is evidently a great mistake, particularly when potash is the ingredient required for the crop. It is true that all the inorganic constituents contained in wood ashes are in a progressed form, and, therefore, have greater value than when taken from lower forms in nature; and it is to this fact that their effect, as a manure, is to be attributed, and not to the potash that they contain, for the lixiviation removes all the soluble potash so thoroughly, as to render them nearly or quite valueless in that particular. Unleached wood ashes, however, have great value to the farmer; they not only supply the valuable constituents of plants, (potash) but precisely in the state in which it can readily be appropriated by them; and, in addition to this, its power to decompose both the organic and inorganic elements of the soil is very great. Some chemists have supposed that ground feldspar, because it contains thirteen per cent. of potash, would supply this element to plants. This is an error, however; the potash of feldspar is not in a progressed condition, never having been in organic life, and, therefore, cannot feed plants of a higher class.

On this subject Von Thaer seems to have fallen into a strange error; but still to have observed the fact, that wood ashes have a greater value than potash in a more primitive form. He says, 'Ashes must contain some peculiar and hitherto undiscovered matter, which gives to them an action so much more efficacious than that of an equal quantity of the same earth which they contain, and taken in another state. It is possible that some portion of vegetable life remains in them which we are unable to appreciate or discover."

If Von Thaer had experimented with weighed quantities of ashes, he might have discovered that the ashes of a burnt hay stack are more valuable than those of burnt wood, and that the potash lixivated from the ashes of higher organisms, had greater value for agricultural purposes than that separated, by any process whatever, from any of the rocks containing it. No farmer can afford to sell his ashes at twenty-five cents per bushel, provided he has soil not replete with potash, and still we find the soap boilers buying ashes at farm houses all over the country. Ashes taken from air-tight stoves is of a superior quality; the potash not being volatile, remains in the stove, while the other portions of the ash are carried by the draft into the chimney, and thus at the end of the season the ashes from an air tight stove, in which wood has been burned, are nearly pure potash.

Dressings of ashes around grape vines, pear trees, etc., are of high value, and soils top-dressed with ashes, never suffer grain crops of any kind to lodge: the silex of the soil is changed into silicate of potash, and supplies this soluble silicate to give coating and strength to the straw, thus enabling it to hold the grain. Perfect grain cannot be produced on an imperfect plant, and nothing tends more to perfect the cereals, than the presence of phosphate of lime and potash, in the condition in which it exists in wood ashes. —*Working Farmer*.

HABIT.—"I trust everything under God," said Lord Brougham, "to habit, upon which, in all ages, the lawgiver, as well as the school-

master, has mainly placed his reliance ; it is habit which makes everything easy, and casts all difficulties upon the deviation, from a wonted course. Make sobriety a habit, and intemperance will be hateful; make prudence a habit, and reckless profligacy will be as contrary to the nature of the child, grown or adult, as the most atrocious crimes are to any of our lordships. Give the child the habit of sacredly regarding the truth, of carefully respecting the property of others, of scrupulously abstaining from all acts of imprudence which can involve him in distress, and he will just as likely think of rushing into an element in which he cannot breath, as of lying, cheating, or swearing."

How to Lengthen the Season.—Farmers in the North often complain that the season for labor and growth is too short. They may lengthen it by underdraining. Land, which under ordinary treatment must be untouched in spring several weeks for the water to run off and dry up, is rendered dry in two or three days if well ditched, giving the farmer the control of his land and the privilege of working it from the opening spring.—*Ex.*

FRESH CLOVER SEED FOR SALE.

250 BUSHELS OF GOOD CLEAN SEED, Canadian growth.

Price on application and samples sent by mail or otherwise. The seed is put up in two bushel bags of the best quality, and can be forwarded with safety to any part of the country.

Descriptive catalogues of seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman, 350 Yonge Street.
Toronto, April 22, 1861.

SHORT HORNS.

FOR SALE—FIVE BULLS, all entered in American Herd Book Prices, from 100 to 400 dollars Also, a few HEIFERS, at low prices. Apply to

T. L. HARISON, *Morley,*

St. Lawrence County, New-York,
or at the *Agriculturist* office, Toronto.

March 9, 1861. 6t.

FOR SALE.

A FEW pure bred Devon Bulls, Cows, Heifers, Calves, &c., of unquestionable pedigree.

Geo. Z. Rykert,
St. Catharines, C. W.

April 10th, 1861. 3-t.

FRESH GARDEN, FIELD and FLOWER Seeds for Spring Sowing.

The Subscriber begs to inform his friends and the public that his stock of Fresh Seeds is now complete, and very extensive, embracing almost

EVERY VARIETY OF SEED

that is adapted to the country. The stock of Agricultural Seeds is large and well selected, and the vitality of each sort being fully tested, the genuineness of the seeds may be fully relied upon.

Merchants and Agriculturial Societies ordering Seeds in bulk will be supplied at wholesale prices. Complete assortments of garden seeds neatly put up in small papers, with directions for sowing, and sold by the box containing 150 papers for $5. Twenty packages of Flower Seeds, choice sorts, will be sent free by post to any part of the Province, to the address of any party remitting $1, free of postage, or 25 packages, postage unpaid.

The Subscriber wishing to give parties who reside at a distance an opportunity to test the qualities of his seeds, will on the receipt of $2, free of postage, send free to any Post Office in Canada, 25 full sized packages of VEGETABLE SEEDS, many of them containing an ounce of seed, and 12 papers of choice FLOWER SEEDS with descriptive catalogue and box included—the seeds to be of my own selection. None but the most useful and desirable varieties will be sent.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.

Toronto, April 22, 1861. 9—3t.

SEEDS! SEEDS! SEEDS!

200 BUSHELS WHITE POLAND OATS; weighs 42 lbs. to the bushel.

100 bushels Hungarian Grass.

100 bushels imported Swede Turnip Seed.

200 bushels of Early and Late Potatoes, fine sorts for seed, with a full and general stock of all kinds of Seed for the Farm and Garden.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.

Toronto, April 20, 1861.

GARNET CHILI POTATO.

THE Subscriber has on hand upwards of a hundred bushels of this new and superior variety of potato to sell for seed.

Alex. Shaw,
Oak Hill, Toronto.

April 15th, 1861.

SEEDS! SEEDS! SEEDS!

TORONTO SEED STORE,

CORNER OF FRONT STREET AND WEST MARKET SQUARE.

THE Subscriber would beg to direct the attention of his friends, and the Public to his assortment of

FIELD, GARDEN, AND FLOWER SEEDS,

Comprising large quantities of *Turnips*, *Carrots*, *Mangel-wurzel*, *Cabbage*, *Onion*, *Parsnip*, and everything worthy of cultivation in this latitude. They are all of the best quality and procured from such sources as to warrant their genuineness.

THE SIXTH ANNUAL EDITION OF HIS PRICED CATALOGUE

Of seeds, contains full directions for the treatment of various Seeds and Crops, together with much valuable information regarding this subject, and *may be had gratis on application.*

It forms a neat little pamphlet of 45 pages, and a perusal of it will show purchasers the advantage of procuring their supply of Seeds from responsible Seedsmen, instead of from parties having no knowledge whatever of the business.

The satisfaction so generally expressed by those with whom he has had the pleasure of dealing heretofore leads him to hope that he will continue to receive a large share of the Public patronage.

Orders per post or otherwise will receive prompt attention, and are are requested to be addressed to

J. A. SIMMERS,
Seedsman.

Toronto, April 1861. 4-t.

FOR SALE.

A PURE bred young short horn Bull; Sire and Dam imported in 1857, and *both* took First Prizes at the Provincial Show in Brantford the same year.

Address, R. R. Bown, Brantford.

N. B. Full blooded cow stock taken in exchange, if desired.

Brantford, April 8th, 1861. 4-t.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Secretary.

Toronto, 1861.

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The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, MAY 16, 1861. No. 10.

The Season.

The present must now be fairly considered as a late spring; all kinds of vegetation being a fortnight behind the average of years, with no immediate prospect of a decided change. We hear that the late severe frosts have done considerable damage to winter wheat in exposed situations, and that many fields have been ploughed up for spring grain. It is to be hoped that the damage has been only partial, and that the great bulk of the extensive area sown to wheat is secure. The weather has been extraordinary, and all kinds of field work are behind. May was ushered in with a severe snow storm, and for several nights the thermometer sunk several degrees below freezing! Generally the weather has been dry, and the days comparatively cold; fruit buds and vegetation have therefore been kept back, and with a more genial temperature to come, they may not be found to have sustained any very serious injury. The recent heavy fall of rain put a stop for several days to farming operations, and upon wet lands, at this advanced period, must prove detrimental. Still, if settled and genial weather should soon set in, a boon that may fairly be anticipated, the finishing of seeding may be performed under more favorable conditions, and the crops, including fruit, prove abundant and remunerative. The prospect for grass, and consequently hay, will, under such circumstances, be more encouraging than for some time past; and the intimate connection between a good crop of hay and the economical management of stock during our protracted winters is a matter which every Canadian farmer perfectly understands.

We must not, however, altogether depend upon the produce of hay and straw for the carrying of cattle through winter; and therefore we again remind our readers at the risk of being charged with repetition, of the necessity of attending to the raising of roots; a branch of improved culture that forms a chief characteristic of modern agriculture. It is not now too late to sow carrots and parsnips, which may turn out as well as the earlier sown in such a season as the present, and mangel wurzel, as soon as the ground gets warm and dry, may be sown on all suitable and well prepared soils, with every prospect of remunerative returns. The long red on deep rich soils will generally be found to yield the heaviest weights; but on drier, and shallower land the yellow globe is to be preferred. Both require ample room both in and between the rows, and the frequent stirring of the ground in dry weather wonderfully conduces to the growth of all these kinds of crops. Mangels, if sown too early, are apt to run to seed, particularly if the land be rich and the season moist and warm; but they should be sown in this country as soon as the ground gets dry and warm, and all danger of night frosts, of much intensity, is over. Mangels, when properly stored, will keep fresh and good till the end of May, and

even later; and will be found excellent for sheep and all descriptions of cattle, particularly milch cows. In cold late springs especially, the farmer finds such an auxiliary in sustaining his domesticated animals of the highest importance.

The principal root, after all, is the Swedish turnip, the time for sowing which is near at hand; the end of the present, or the beginning of next month. If Swedes are sown too early, particularly on rich soils, and the season should prove warm and showery, the plants will, in all probability, become affected by mildew, and its feeding properties consequently very much deteriorated. The purple top yields, perhaps, the heaviest crop of the several varieties under cultivation, but Laing's Improved, from its peculiar growth and qualities, is the one most suited for table use. Sowing in drills is almost universally to be recommended, but the exact distances either in or between the rows depend in some degree on the nature of the soil, as regards texture and fertility, the variety of turnips selected, and must be left to a certain extent to the judgment of the cultivator. On good, well prepared soil the distance between the rows may vary from twenty to thirty inches; and under proper management in favourable seasons, a crop may be obtained of from six to upwards of eight hundred bushels per acre. No farmer, however small his holding, ought to be without this invaluable root. It is one of the most satisfactory signs of the improving condition of Canadian farming, that the cultivation of turnips, mangels, carrots, &c., is annually increasing.

The Provincial Exhibition.

In another part of this issue will be found a circular from John Barwick, Esq., President of the Agricultural Association of Upper Canada, calling the attention of farmers and all others interested to the importance of making timely preparation for a participation in the great Annual Exhibition of our Provincial wealth and industry, this year to take place at London. The Board of Agriculture held a meeting at that city in the beginning of April, and also attended a meeting of the local Committee there; when, notwithstanding there have been rather formidable difficulties to encounter, in regard to the local preparations, there appeared full reason to be assured that ample and satisfactory accommodation would be prepared; and that the intelligent and energetic farmers and business men of that fertile and prosperous district would by no means suffer even a partial failure to take place in their part of the programme. We have, therefore, every reason to beleive that the exhibition at London this year will sustain the high position which the Annual Provincial Exhibition of Upper Canada has earned for itself amongst displays of a similar character. Farmers, breeders, manufacturers, and others who design exhibiting, cannot begin too soon to keep their preparations in view, if they would secure the greatest perfections, in form or quality, and most perfect condition attainable, in the different animals or articles detailed for show. The Prize List will appear early in June. In the meantime, those who design exhibiting may take the lists of former years as a guide, as prizes will be offered for the same articles, and the aggregate amount will be larger than that of any former years, except ast year only, when the amount was considerably increased on the special occasion of the visit of the Prince of Wales.

Provincial Exhibition of 1861.

CIRCULAR FROM THE PRESIDENT OF THE AGRICULTURAL ASSOCIATION.

To the Agriculturists, Horticulturists, Manufacturers, Mechanics, &c., of Canada West:

The Board of Agriculture for Canada West lately met in the City of London, with the view of conferring with the Local Committee organized for the purpose of making preparations for the Provincial Exhibition to be held in London on the 24th, 25th, 26th, 27th September next.

The Local Authorities have procured very advantageously situated ground, to the extent of twenty-seven acres, for the use of the Association, (the same as that occupied in 1854), and are making active exertions to erect permanent buildings, stabling and sheds. Exhibitors may rely that ample and proper accommodation will be provided, and I trust that there may, as on former occasions, be a spirited competition from all parts of the Province.

The prize list will be published early in June, and will call for competition in the same classes

as in the past years, with some additions. The amount to be awarded will be about 12,000 dollars.

Arrangements have been made with the Great Western, the Grand Trunk, and other western railways, and also with the proprietors of the lake steamboats, to carry passengers, stock, and articles to and from the Exhibition at reduced fares.

The accommodation for visitors in London will be ample, and the hotel charges moderate.

JOHN BARWICK,
President Prov. Agricultural Association.
Woodstock, 30th April, 1861.

Shipment of Stock for Canada.

EDITOR OF THE CANADIAN AGRICULTURIST.—On Thursday, the 11th inst., the *Helen Douglas*, of Annan, sailed from the port of Annan with a full cargo of general farm stock for America. In every respect the whole of the animals are, from the continued improvement of the breed, much superior in quality to any previously shipped from this country. The various Agricultural Societies' shows held throughout the kingdom have done much to enlarge the ideas of our noted breeders; and it may now be stated, with at least some degree of confidence, that the different kinds of stock in this country are rapidly approaching to a state of perfection. Many of the enterprising farmers and breeders in this county (Dumfriesshire) have already gained a world-wide reputation for their horses, cattle, and sheep; and their names, under the respective classes of animals, appear as eminently successful competitors, not only at all the great and important shows of stock in this country and in England, but also throughout the continent, and in America.

Having had an opportunity of ascertaining from whom Mr. Simon Beattie, of Markham, Canada West, purchased a portion of his stock, it may be interesting to some of your agricultural friends to learn that amongst his lot he has a two-year old Durham heifer and a bull-calf from the far-famed herd of Mr. Syme, of Redkirk, in this country. The heifer is a very superior and well-bred animal, and the bull-calf is out of one of Mr. Syme's favourite cows, and is considered by him to be one of the very best ever sent from his herd. Mr. Syme's name, as a breeder of Shorthorns, is not better nor more extensively known in this country than it is throughout Canada. He has sent out many cattle from his stock that have obtained numerous prizes there; and in this country he has long held high ground among agriculturists for the excellency and purity of his breed. The next animal specially worthy of notice is a two-year-old heifer from the no less famous Galloway herd of Mr. Beattie, of Newbie House, near Annan. This animal gained a first prize as a yearling, at a public show, where there were exhibited some of the best Galloways in Dumfrieshire. Mr. Beattie, of Newbie House, is, and has been the exclusive proprietor of the well-known race of Galloway bulls distinguished by the name of "Mosstrooper," that have gained more premiums and medals than any other bulls in Great Britain, and have never been beaten—see the catalogues of the Royal Agricultural Society's Shows of England, and of the Highland Agricultural Society's Exhibition of Scotland. Mr. Simon Beattie has also taken out an excellent Ayrshire cow from a noted dairy stock in the south of Scotland. The sheep have been selected with no less care, and include rams and gimmers from the flock of Mr. Walker, North Leech, Gloucestershire rams, shearling rams and gimmers from the well-known Leicester stocks of Messrs. Simpson, Sandys, and Barton, in Yorkshire, and of Mr. Beattie, Newbie. The rams have been purchased at a cost of not less than £15 each. Indeed, it may be stated under this class, that the animals are of the best blood in the world; and it may also be observed that the different breeds cannot approach more closely towards excellence of form. The English breeders above named have long held and enjoyed a high reputation for their sheep, and no less famed is Mr. Beattie, of Newbie. The latter gentleman was, last year, the most successful competitor for Galloway cattle, and Leicester sheep, at the Highland Agricultural Society's Show, held at Dumfries, which was open to the world. Too much praise cannot be bestowed on Mr. Simon Beattie, of Markham, and on the other gentlemen who accompanied him, for their perseverence and enterprise. No expense was spared by them; and on this account they were enabled to visit and select from the stocks of the most eminent breeders in Great Britain. It is to be hoped, therefore, that the animals taken out with them will tend to improve the breed in America, and will maintain the high-won fame and reputation which the breeders of them have deservedly attained in this country. CORRESPONDENT.

Annan, Scotland, April 20, 1861.

Judges and Competitors—The Provincial Exhibition.

EDITORS OF THE AGRICULTURIST:—The time is drawing near when the Judges will be appointed for the Provincial Exhibition to be held in London in the fall. The appointment of judges is an important matter. They ought to be men that know their duty and that will honestly perform it. One of your correspondents, in the No. of *Agriculturist* of 15th October last, says:—"I cannot refrain from making some remarks when I am hearing daily the bitter and numberless complaints of exhibitors

at the late Provincial Show held at Hamilton of the unjust decisions of inexperienced and incompetent judges." He thinks the only persons fit for judges are exhibitors—and at the same breath he says, "The judges permit and almost court the presence and interference of parties who are themselves exhibitors." And to such an extent is this carried that he himself has witnessed exhibitors accompanying the judges in the classes in which they were more immediately interested, particularly in stock, through the whole of the examination. It appears to me that judges and exhibitors are tarred with the same stick, and all this knavery might have been prevented by having honest, intelligent, practical farmers at the head of our Agricultural Societies. In more than one of our County Societies, the directors seek no further than among themseves, and although many of them don't know how to grow a rotation of crops, without a blush they assume the office of a judge in any class of animals, from a horse to a hen, even to animals that they never saw before, and, without knowing anything of their merit, make their remarks of approval or disapproval. The symmetry of an animal is scarcely ever looked at, if they are big and fat it is all they care for; and there is no doubt if Barnum's woolly horse was shown among the Cotswolds he would get a prize or attract a recommendation. There is something very objectionable in the unfair manner in which sheep are shown; it is two months since shearing was begun in a neighboring county for the Provincial Show; all the shearing they get is a little taken off the top of the back; all round the sides, and below is never sheared; this is nothing but deception in order to increase their apparent bulk, and hide their deformities. They are fatted on grain and oil-cake from the 1st January till the last of December. Both sheep and cattle of that stamp are unfit for breeding; and I know of more instances than one where the owners, after keeping them for a season, have been obliged to dispose of them without any lineage.

A Farmer.

On Tile Draining.

Editors Agriculturist,—As the farmers in this section of the country are beginning to see the advantage of underdraining, perhaps you would be kind enough to inform us, through the *Agriculturist*, how Tiles are covered up in the ground, and whether straw or any other material is necessary?

So far as our knowledge extends there is not a tile laid in the ground east of Kingston.

Single underdrains have frequently been made in this locality, but stones have been the material altogether used for making the pipe; and in some instances small round stones have merely been thrown in to form the drain. But it has always considered necessary to throw straw or brush on the stones, before filling in the earth.

Yours, &c., Andrew Wilson.

Maitland, May 6th, 1861.

Where proper tools can be obtained the bottom of the drain can be cut of the exact width of the tile or pipe, which should be carefully put in on an even bottom, having a sufficient and uniform fall. In a heavy clay subsoil it is a good plan to cover the tile a few inches with brushwood straw or the lighter portions of the soil, which renders the earth contiguous to the drain more porous, and thus allows the water a quicker access to the drain. A few inches of gravel or small broken stones are excellent for this purpose, but in many situations such additions would materially increase the expense of the operation. In lighter soils it is advisable to cover the tiles with the stiffer portions of the earth that has been thrown out. If the soil is very light and porous, it is of importance to dig the drain deep enough, if practicable to reach a stiffer stratum of the subsoil, and to cover it with the stiffest earth that can be obtained to the depth of several inches. In loose running sands,—the most expensive and difficult of all soils to drain the greatest care should be exercised, or the work will speedily fail. Where a stiffer soil cannot be reached, which always ought to be done if possible,—say within five or six feet,—a board should be laid at the bottom of the drain, and the pipes carefully laid upon it, and a few inches of soft clay closely trod upon and at the sides of them. The pipes or tiles should be made to fit each other at their joinings as much as possible. Indeed for running sands there is no safety but in having the pipes fit into each other or connected by collars, and protecting the joints by clay. If such precautions are not taken the sand will be sure to find its way sooner or later into the pipe and effect a partial, or, as is generally the case, a complete obstruction to the exit of the water. An inverted sod, either in stiff or light lands is a good covering for the drain. But in the sandy soils referred to clay is an indispensable material.

Stones are a good material for constructing drains, when they can be readily procured and

of the right kind. It requires care and experience to use them properly. Drains filled ten or twelve inches with broken stones or gravel have been found effectual in some soils; but this method is not generally to be commended either on the ground of economy or efficiency. An aperture or conduit is desirable, if not an indispensable requisition, allowing the water a more ready egress,and renders the work both more durable and efficient. Drains formed of gravel or broken stones not only act slowly but are very liable to become silted up in a sandy soil, and especially when the inclination is small.

The cheapest and best material where suitable stone cannot be got on the spot is unquestionably tiles, particularly that form designated the pipe, which to be of good quality must be made of good well-worked clay, thoroughly burnt, so that it will have a metallic ring, when struck. But in remote places, where farms are still in a rough and unfinished condition, very much may be done in the way of temporary draining, by making open ditches through the wettest places, and filling in covered drains with old rails, brush wood, &c. Such devices will be found serviceble for many years, and will meet the wants of farmers on new lands, till they obtain the means of carrying out a more permanent and complete system of draining.

Ploughing Match in Clarke.

Editor of Agriculturist.—I have been directed by the Board of Directors to send you this notice, thinking that it may prove of some benefit to our farmers. The Township of Clarke Agricultural Society held their Ploughing Match last week, and awarded the following prizes in their several classes :—

The Sweepstake, open to all classes of ploughs, George Fountain.

1st Prize for Iron or Wooden Scotch plough, (men,) John Gallbraith.

2nd do do do do do James Kenear.

1st Prize Canadian Plough, (men,) William Burnett.

2nd do do do " do Tait.

1st Prize, Any Plough but Iron, (boys under 18 years,) John Davie.

2nd Prize, do do do " Richard Brown, Jr.

One of the most important features in connection with this Match was an *Extra Class*, a prize awarded to the ploughs of any make—of lightest draft ; they were to turn a furrow of nine inches wide, and six inches deep. There are few farmers but what have an opinion of their own respecting the various qualifications of ploughs ; but few, if we except the owners, were prepared to see the great differences existing in the draught of the various ploughs entered. It has opened the eyes of this community—and it should every other quarter—at all events to a class of ploughs which has been condemned by many, and yet who never tried them, as being more unwieldy and cumbersome, in fact *Horse Killers*, as they are frequently called. They appreciate them for their work, and yet condemn them for being too heavy. I refer to, the Iron Plough, which when of a proper kind, and a man between the stilts who understands them, cannot, for work, be beaten by any other plough.

I give you the draught and kind of plough as under :—

No. 1. Iron Plough, imported, Barrow Mould Board, 375lbs.

No. 2. Wood Plough, made in this Township, Gray's Mould Board, 400lbs.

No. 3. Iron Plough, imported, Gray's Mould Board, 425lbs.

No. 4. Wood Plough, Canadian, Holten pattern 450lbs

No. 5. Wood Plough, Canadian, Scotch Canadian, 475lbs.

No. 6. Wood Plough, Canadian, Scotch Canadian 500lbs.

No. 7. Wood Plough, Canadian, Markham, 575lbs.

No. 8. Wood Plough, Canadian, Markham, 600lbs.

These were tested by a competent Committee, and a Dynamometer.

There was a very large attendance of people, the day being well suited for the occasion, and the ploughing was done in first-rate style. After the plough-men got through with their work they, together with the judges and Directors were invited to partake of a capital dinner, provided by Joseph Rickaby, Esq., in whose field the Ploughing was performed. After partaking of the good cheer, the company separated, every one being satisfied with the day's proceedings,

Yours, &c., E. A. McNaughton.
Secretary.

Newcastle, May 8th, 1861.

The Royal Dublin Society's Spring Show.

The Spring Exhibition of this important Society was held as usual on its premises in Kildare Street, the beginning of April. The weather was unpropitions and the extensive improvements of the buildings and pens not thorough-

ly completed. Still the Show in point of numbers and quality was considered successful. The implement department was well filled, most of the English makers being represented. A new and capacious Hall has recently been erected and the society now possesses extensive and convenient premises for the purposes of the Show, as well as permanent offices, museum, etc., in the heart of the city. The live stock, on the whole, appears to have been large in quantity and excellent in quality. *The Irish Farmer's Gazette*, which ranks amongst the most influential and widely circulated agricultural journals of the United Kingdom, remarks:

From our spring shows, breeding animals have been sent to Australia and to America; and whilst English breeders of the highest eminence have drawn upon its sections for the far-famed excellence of their herds, some animals which have stood under the glass-covered arches in Kildare-street are to be found even as far north as "John O'Groat's House." It is the ready sale afforded for breeding stock which draws together such a number of superior animals as our spring shows exhibit in the Shorthorn sections, and not the intrinsic value of the prizes offered by the Society; and for this reason, therefore, we might as well expect Ballinasloe fair to change its site, as to think that the spring shows of the Royal Dublin Society should be held anywhere but in Kildare-street.

The plan of admitting the public from the moment when the judges commence operations, which was tried for the first time on Tuesday last, was found to give general satisfaction. There was a considerable number present even from an early hour, and as the best of the different sections were paraded, their several merits and demerits were closely criticised, and sometimes in a manner which told that public opinion did not go always with that of the judges. Of one thing, certainly, the public felt assured, that whatever might be the judges' decisions, those were never given hurriedly. They were most painstaking in all they did, and we dare say several who were present on Tuesday went away not only fully satisfied that the public lie under very great obligations to gentlemen who acted as judges on such occasions, but also that being a judge at such shows is not the easy matter many, perhaps, imagined it to be. At the same time, we do not see any necessity for quietly endorsing every decision which may be made by those gentlemen, simply because they have willed it to be so.

The Gazette furnishes four excellently executed wood cuts of Shorthorns' which obtained first premiums, medals and challenge cups. The Marquis of Waterford's bull, "*King of Hearts*;" a two year old white heifer of Captain Bate, county of Limerick, called "*Nightingale*;" a yearling heifer, "*Florentine*," the property of Mr. Abbey, of Tralee; and a roan bull, "*Sonbadar*," owned by Mr. Coppinger, of Carringtuohill. The latter was awarded not only the first prize in his section, but also the costly challenge cups of the *Irish Farmers' Gazette* and the *Irish Railway*.

The prizes were distributed in the evening by the Lord Lieutenant, who on a vote of thanks being passed spoke as follows:—

I feel very certain that those whom I have the pleasure to address do not need to be assured of the real interest which I feel in the exhibitions of this society, connected, as I conceive them to be, with the advancing progress of Irish agriculture (hear). I am only copying the example of the Prime Minister of England, and, I have no doubt anticipating the example of the Chancellor of the Exchequer, when he brings forward his approaching budget, when I make some illusion to the inclement character of the seasons through which we have recently passed (hear). True it is the spring, summer, autumn, and winter have conformed to the usual law and course of nature in the respective lengths of the nights and days; but hail, rain, frost, and storm have appeared to occupy a joint preponderance throughout the whole of those seasons (hear). Seldom, indeed, have these island shores been more strewn with wrecks, and we have had to lament the loss—outweighing unnumbered argosies—of brave human life (hear). But difficulties and drawbacks seem to be the appointed schooling through which improved agriculture, as well as everything else that is sterling and valuable in our knowledge, is destined to struggle, to emerge, and to thrive, (hear, hear, and cheers). And I think it may justly be said that the show in your yards this afternoon has given good proof that even the weather of last year has not impaired the vigour, or the beauty, or the lusty proportions of the Irish stock (cheers). I think no one can have witnessed the exhibition of this day without feeling an increased confirmation of the conviction which we must have long entertained of the progressive character of Irish agriculture (hear, hear). The agricultural returns which are collected every year, while they show the material changes in various crops, and the general condition of agriculture, uniformly exhibit a steady increase in the quantity of live stock. It is true that these returns, while they tell us of quantity, are necessarily silent with respect to the quality. It is to general observation and to advancing prices that we must look for information in that particularly; and such shows as those of Baker-street in London, or in Kildare-street here, give the very best op-

portunities for this purpose, taken in conjunction with the circulating visits of the agricultural societies through the various counties of the land. It seems to me—and I wish we could have had fuller testimony from those who could speak with authority on the subject—that the very highest excellence marked the exhibition to-day throughout its various departments, from the lordly bull down to the less grand but far more loquacious poultry (laughter and applause). It is obvious that the increase of skill and the application of science to agriculture must tend to make us more and more independent of weather. The increase of agricultural machinery both enables us to save many crops, which the accidents of a precarious climate would otherwise only damage and destroy, and it further enables us to improve our labourers in methods which call forth thought and develope skill. And there is no one circumstance connected with the whole subject more important and more gratifying than the certainty that the introduction of machinery, so far from injuring the labouring classes, advances them in the scale of society (hear, hear). To appeal to the most obvious test, the rate of their wages throughout this country already exhibits a very considerable increase. All the departments of agriculture, you may depend upon it, hang together, and in improving the whole we improve every part of it, and also the condition of those who contribute to its respective branches. I have alluded, gentlemen, to the return of agricultural statistics, the possession of which places this country in a much more advantageous position, so far as that is concerned, than the sister countries (and for them we are mainly indebted to the wise foresight of my distinguished predecessor, the Earl of Clarendon). But over and above the numbering of our oxen, our sheep, our horses, and our swine, we are all about to undergo the process of being numbered—(a laugh) "the diapason ended full in man." I believe the agricultural returns contain particulars of the respective ages of our yearlings and our two-year-olds: I understand that a scrupulous degree of accuracy will be directed to ascertaining the ages of our ladies (a laugh). However, gentlemen, the census, when completed, will tell us what the exact number of our population is, and also will enable us to infer with tolerable accuracy the extent of the emigration going on amongst us. Now, I am not one of those who consider with any uneasiness the general results of emigration. Of course, when exile from home is occasioned by suffering and privation it must be an object of regret to all well constituted minds; but considered in its broad results, I believe that while emigration fulfils the general destiny of our race, in peopling the whole earth, it ordinarily will be found to improve the condition of those who go and of those who remain (hear, hear). It is possible that the approaching census to which I have referred may exhibit some slight diminution of the population, but as the strength of an army does not depend so much on its mere numbers as on its discipline and its organization, so, depend on it, the good condition of a country results far less from its actual increase of numbers than from its command of the comforts of life, its industry, its intelligence, and its moral character. Well, gentlemen, I feel I am justified in heartily congratulating the friends and promoters of Irish agriculture generally, and the members of the Royal Dublin Society specially, upon the exhibition of this week. The members of this society bring together the principal results, the industry, and the art of this country into close and immediate proximity, thus symbolizing the real independence and connection which they have with each other (hear, hear). Already, as Mr. Foot has intimated to you, upon your ample lawn here, which has so long been devoted to agricultural displays, and where the live stock, the implements, and the husbandry of the country in all its branches have now met in friendly rivalry—already on one flank we see the fair length of the Museum of Natural History, and on the other flank there is approaching to its completion a corresponding building, destined to be a national gallery for painting and for sculpture. But I agree with Mr. Foot, that these last pursuits seem to require something placid and composed for their immediate framework. We have heard that there was a time when the flock strayed in the centre of the Roman forum, but that was before its pillared arcades became the centre of business and of worship. So I rejoice to know that it is sought to guard with additional sanctity the lawn of Leinster House, and there is a hope, to which I shall willingly give any efforts of my own to contribute—(loud cheers)—to provide a separate and still more convenient site for the general agricultural displays closely adjacent to the recently-constructed handsome covered hall (hear, hear). But whatever your own exertions, or whatever the help of the state may enable to be accomplished, you will still do well to remember that the real interests, and success, and glory of all such exhibitions consist in the intrinsic merits of what is exhibited; and I trust that all present on this occasion will often meet here to renew—I cannot venture to say to increase—the admiration which the exhibition of this week has now kindled (loud cheering).

Agriculture—Its Past, Present and Future.

Continued from page 271.

The Future of Agriculture—Steam.—It is impossible to overrate the enormous impetus given to every industrial, and, indeed, to every mental occupation, by the invention of steam power. Some of my views on this subject having been already laid before you in my paper

read last year, I will not recapitulate them. To withdraw steam power from us would be to plunge this country into ignorance, poverty, and disorganization. Agriculture is only on the threshhold of the use of steam power. She has never cheapened her products, nor supplied the wants of her customers. It is no exaggeration to expect that every farm of 100 acres will give employment to four horses of steam power. When this takes place, a large area of land used to feed horses will be set free for the production of human food. I also venture to predict that great commercial companies will be formed, who will purchase estates, parcel them out with topographical economy, and connect them with the towns and cities, whose sewage they will economise. We shall then see our agricultural engines gliding along a line of rails from farm to farm and city to city, drawing the produce to market—cultivating the farm. To see the powerful monster drawn by four horses along the common road is an insult to mechanical common sense, and, could the engine speak, would receive his indignant condemnation. When the locomotive was invented, somebody found means to expend £300,000,000 to make a suitable road for it, and somebody will, some day, do the same for steam in agriculture. The future of British agriculture may be said to rest upon the sufficient use of that cheap untiring power which has given such an enormous development to almost every branch of our national industry except agriculture. Steam, whether for cultivation or for the manipulations necessary in a well conducted homestead, for draining the swamps and irrigating the hills, and above all, for applying town sewage to our pastures, green crops, and root crops, will become the sheet anchor of British agriculture; and it is by this economy that the British farmer will be strengthened in his competition with other corn producing countries. That great man, Baron Liebig, has revealed to us the mysteries of our subsoil—that subsoil into which the British plough has never yet penetrated. His researches raise a doubt whether it is possible to manure the subsoil through the cultivated top soil; if so which I believe, how all important it must be to bring the manure, the air, and the subsoil into immediate contact and admixture with the surface soil. But, in any case, let us seek in our subsoil, by means of steam, that treasure which the old farmer told his son to dig for.

Public Companies for improving Agriculture.—Assuming and believing that great and comprehensive improvements in agriculture will originate with public companies, I prognosticate that a combined system of irrigation—town sewage irrigation—and railroad transit must form an important feature of any great district operation. The principles of drainage, steam cultivation, covered buildings, steam machinery, &c., so well understood by our agricultural engineers and surveyors, would naturally form a portion of every such improvement. "But," said a farming friend of mine, as we discussed this question of connecting farms and towns by rail, "how can you expect to do this? Mr. So-and-so would not listen to such a proposition, and his landlord would not like his farm altered and cut about." I reply there is no cure for prejudice like a public company and an Act of Parliament. At this very moment regardless of affections and prejudices in favour of old residences and old customs, our new Railway Companies are, by Acts of Parliament, levelling whole streets, and blocks of houses, overlapping, undermining, destroying and reconstructing, with a hardheartedness yet unknown to British landholders, and British tenants. I hope the time is fast approaching when great associated companies of city merchants and rich agriculturists will expend enormous sums in the purchase and reconstruction of estates, making them subservient to the one grand object of an economical use of steam power for almost every farming operation, including sewage irrigation. We shall then not have the mortification to know that it is possible to carry coals at three farthings a ton per mile, at 20 miles per hour on a railway (farmed at enormous cost, and still paying Consols interest to its shareholders), while our farm produce on the common road costs us 8d. per mile, and crawls along at a snail's pace. When estates and farmeries have been so improved by public companies, farmers will be found willing to pay a double or a tripled rental, provided they see that such increased rent only represents a fair interest on the necessary improvements; and such estates, or portions of them, would readily find purchasers. We all know that farmers like to hold under public bodies (such as Charities, &c.), because their tenure is more secure, and they are more free from personal or political interference or caprice then when holding under a single individual. I have no doubt that Parliament will some day so facilitate the registration and transference or exchange of lands, that public companies may be found to deal with land improvements. It seems odd that, while hundreds of millions of capital flow into almost every other channel, British or foreign, agriculture has not been dealt with, except lately, on a limited but beneficial scale, by the "Land Drainage" and "Land Improvement" Companies. When I suggest public companies, I mean that they should do, on a large scale and with immense resources, that which it would be impossible for individuals to accomplish, and having made all necessary improvements, sell or let the various farms so improved.

Land Drainage.—It would be an insult to this Club to enter into details on this now well understood subject. Its influence on the quality and quantity of the food of the people

is, over a large area enormous; but still non-drainage is the rule, and drainage the exception. In this respect there is a grand future for agricultural improvement. Land drainage was practised in Essex and Suffolk one hundred and twenty years ago, on hard chalky clays, and mixed or friable soils, and no doubt greatly increased the produce and reputation of those counties as grain producers. Strange however, to say, it is hard to make farmers believe that in the tenacious (birdlime-like) collapsing clays, drainage is of any use, and there is consequently an enormous extent of such soils undrained in Essex and elsewhere. It is easy to understand that this prejudice arose from the impossiblity of using with advantage in such soils bushes or straw, the only draining materials formerly in use—these butter-like soils collapsing and stopping such drains; but now that we have tileries for making pipes or tubes, no such danger need be apprehended, and I hope our friends will soon give up their prejudices, and so fill their pockets. Honourable mention should be made of the names of Elkington, Smith of Deanston, Josiah Parkes, Bailey Denton, and Clutterbuck, in connexion with the science of this art. Scotland was seventy years behind Essex and Suffolk in this matter of drainage, but then our Scotch friends did it in earnest, and have connected with it deep cultivation and subsoil cultivation, and in this, respect are in advance of English agriculturists. Scotland owes to James Smith, of Deanston, her drainage and deeper cultivation, and an early appreciation of town sewage. I had the pleasure to know this useful man, and his views agreed with my own, that we were still only on the threshold of agricultural perfection.

River Reform, so ably discanted on by Mr. J. Algernon Clarke, will surely soon make its way. In former times, when our daily bread depended on the action of our watermills, the law was strained in favor of the miller, who may be said to have occasionally, and not unfrequently used the adjoining lands as reservoirs of water from the river to the ruin or injury of said lands: but now that mighty steam has insured to us, at all seasons, a comfortable loaf, a change is taking place, and the Judges have recently, in a most important issue, ruled that the unseen water in the land is the property of the landholder, and that even if sinking wells and using the water should dry up a river by diverting substerraneously its waters, no action would lie. Open ditches, or rivulets leading to a river, must, however, be still respected. This decision must lead to most important results, enabling landowners to dry or lower the level of the water in their soil, and use it for irrigation if desirable.

Tenant-Right and Leases.—The history of the past shows that the former violent fluctations acted as a bar to security of tenure by lease: no landlord or tenant believed in an average of prices. Without going into the question of Free Trade, our Tithe Commutation Act has afforded us something like an approximation of averages over a given period. Let us hope that the words "average 56s. per quarter for wheats" may give confidence in leases: it is certain that without leases no tenant will invest his capital in improvements, unless secured a tenant-right for such investments. The Scotch 19 years' lease appears to ensure a good improving tenantry, and a large increase of rental at the end of the term. In Essex, a man without a lease may expend £20 an acre in drainage, chalking, and other improvement, and if he dies, and the farm be given up, not a shilling of it would come to his executors.

The Labour Question.—Labour is silently, but surely, slipping away from agriculture to the better food and higher pay of other industrial occupations. The parliamentary and excursion trains have provided a quick and cheap transit, and so have our coasting steamers. The new implemental requirements of agriculture, both British and foreign, have absorbed many a farm labourer: and the almost unobserved but regular trans-mission of the same class to distant colonies, by the Emigration Commissioners, also tells upon the farmer's labour store. This is well for the country, for necessity is the mother of invention; and agriculture may be more readily impelled by need than by persuasion to resort to that mighty power which has enriched our manufacturers. Experience has taught us that, as farm labourers come in contact with manufacturing towns or cities, they can only be retained on the farm by an increase of wages; our southern and non-manufacturing districts will not, therefore, long retain cheap labourers, especially now that the penny press makes them acquainted with the money advantages of an employment elsewhere.

The Labourer's Condition and Cottage.—The labourer being the most important tool in agriculture, it is desirable that he should be sharp and well polished as well as strong. This has not hitherto been sufficiently attended to, but it must very soon be. The schools now gradually erecting will enable the rising generation to read the instructions for cleansing, repairing, and managing the steam engines which agriculture must put up. They will also be able to read their Bible and their penny newspapers; probably hereafter they may be not thought unworthy of local libraries and literary institutions, also baths and washinghouses. The extension or abolition of the law of settlement will destroy the old selfish and unfeeling practice of foisting on your neighbour, in his old age or affliction, the man whose labours, in his youthful vigour, contributed to your wealth. The landlords are beginning to believe that the indecent propinquity of crowded bed-rooms, added to the evil sanitary results of insufficient house room, tell indirectly, but most unfavourably, on their pe-

cuniary interests. The profit from good labourers' cottages must always be, in some degree, indirect.

Meat making.—Future advances in agriculture will, I venture to predict, be based upon and identified with the production of a much larger acreable quantity of meat than we at present produce. The constant increasing prices of meat plainly testify that demand is exceeding supply, and that foreign nations cannot make up the deficiency. Our acreable area being limited by the ocean, the only means of doing this must be the extensive use of purchased food and manures, and by the economy of the sewage of our towns. The consequence of this improved system will be felt in our grain crops; for the more meat you produce, the more manure you make, and, consequently, the more corn per acre you will grow on the arable portion. This production of more meat will necessitate a better knowledge of the mode of producing it, having regard to a profitable result.

The future Character of Farm Residences and Farmeries.—It is notorious that if you are to have for your tenants men of capital and intelligence, their residences must be suitable to their intelligence and means. I know practically, and it is notorious, that on many of our large south country farms the residences are totally unfit for such a class of men; who, I believe, would willingly pay an increased rental for such necessary accommodation. The landlords of such farmers are therefore obliged to put up with men of inferior capital and intelligence. Surely a farmer of 700 acres, with a capital of £10,000, should not be lest favourably housed than a merchant or a trader.

"*Burn your clay into Brickdust,*" will be a motto with every heavy land farmer. I know one who for years has continued burning a clay hill. It provides him with healthy bedding for his stock, and with alkalies for his root crops. It permits him to consume his straw in food, instead of wasting it under foot. It renders his land friable and more economical to work; and it has thus largely increased his green crops and profits. This is also my experience in the matter.

With regard to our Homesteads and Farmeries.—The time will come when we shall see them like factories and railway stations, warmed in cold weather, lighted with gas; the manure well cared for, unwashed, and with its full powers preserved. These things are all necessary to the cheap and abundant production of meat and bread for the British people. It is of no use to cry out, Where is the capital to come from? It will be found as it has been found, when the requirements of the times and the increasing intelligence of landlords and farmers shall have given the subject due consideration. Let the system be introduced by those who are able and willing, and let it be found to be profitable, and the rising generation will grow up with its acceptance, free from the doubts and disbeliefs of their forefathers, who had not had practical evidence of its advantages.

In conclusion, it is a great mistake to suppose that farmers are naturally more prejudiced than other men. It must be remembered that it has been their misfortune, and not their fault, that the difficulty of intercourse prevented those examinations and comparisons which the railroads and literature of recent times have permitted them to make. That there exists a most creditable desire to avail of such opportunities has been abundantly proved by their overwhelming attendance at the great annual and other exhibitions of stock and machinery. My object in reading this paper has been, not to find fault, but to stimulate. I know the difficulties of agriculture: I know that we cannot control the seasons; but we may, by improvements, so moderate their ill effects as to avoid those famines and sufferings which, in less favoured times, afflicted this happy country. For the future let agriculture assume more of the manufacturing character; and let the question be, not what it costs, but what it will pay, to effect agricultural improvement.

Effect of Grass on Colts.

When horses are turned out to grass in the spring of the year, the succulent nature of the food causes them to purge, often to a great extent; this is considered by many persons a most desirable event—a great misconception. The herbage is over charged with moisture and sap, of a crude, acrimonious nature, to such an extent that all cannot be taken up by the organs destined for the secretion of urine, or by the absorbent vessels of the body; the superfluous fluid, therefore, passes off through the intestines with the indigestible particles of food, and thus the watery fæces are thrown off. Flatulent cholic or grips is a frequent attendant. The system is deranged; but the mischief does not terminate here. If the purging is continued a constitutional relaxation of the bowels is established, very debilitating to the animal, and often difficult to control. I am so decidedly opposed to unrestricted allowance of luxuriant grass to horses at any age, that nothing could induce me to give it to them. After the second year, hay should form a considerable portion of the daily food in summer, to every animal intended for hunting or riding.

If a horse is supported entirely upon the grass which he collects in a rich pasture field, or upon that which may be cut and carried to him in paddock, he must consume a much greater bulk than of hay in an equivalent time, to afford nourishment to the system.—Grass being very full of sap and moisture, it is very rapidly digested, consequently the horse must be con-

tinually eating it. This distends the stomach and bowels, and the faculty of digestion is impaired, for the digestive powers require rest as well as other organs of the body, if they are to be preserved in perfect condition. By the custom of grazing, the muscular system is enfeebled, and fat is substituted. This may escape the notice of the superficial observers, who do not mark the distinction between the appearance of a fat and mascular animal, who conceive, so that the bones are covered, and the points are rounded, all that is requisite has been attained. But that is a very fellacious impression. Let any person who is skeptical on this point ride a horse in the summer who has just been taken from grass, along with another kept on hay and corn, at the moderate rate of seven or eight miles an hour; the grass-fed horse will sweat profusely, while the other will be perfectly dry. This proves that the one eating grass overbounds with fat and those portions of the blood which are destined to form that deposite.

Those who will advocate grazing will no doubt exclaim, "Oh, this is a test of condition, which is not required in young and growing animals." I beg to state that it is highly important if the acme of condition is to be attained by animals of mature age, that the growth and gradual developement of their frames should be composed of those healthy and vigorous elements upon which the structure of future condition can be raised. Animal substances are, to a very great extent, subservient to the nature and quality of the food with which the individuals are nourished. I believe farmers would find it much to their advantage if they were to consider the subject with reference to feeding cattle and sheep, so that they might select those kinds of food which abound with properties more conducive to the production of flesh than fat—There is no kind of food which the horse consumes which has not a tendency to deposit fat. It is a substance which must exist to a certain extent; but as it is muscular power, not a predisposition to adipose rotundity, which enhances the value of the animal, the reasons are obvious what guide should be taken in the selection of food.

I have on a former occasion hinted the propriety of bruising the oats, and I will now state my reasons for so doing. The first I will mention is economy. Three bushels of oats which have undergone that process are equivalent to four which have not, and the animals that consume them derive greater benefit. Various schemes are adopted to induce horses to masticate their corn, all of which are ineffectual. Scattering them thinly over the surface of a spacious manger, mixing a handful of cut straw with each feed, and such like devices, will not cajole the animal to the performance of mastication. A horse that is dispose to bolt his corn, however careful it may be spread along his manger, will soon learn to drive it into a heap with with his nose, and collect as much with his lips as he thinks fit before he begins to masticate.—Whatever food enters the stomach of any animal, and passes away in an indigested form, may be considered as so much dross or extraneous maatter, which, not having afforded nutriment, is prejudical to the creature which consumed it. A mistaken notion of economy is often the incentive to turning horses out in summer, to be entirely dependent upon grass for their support. A few remarks will surely dispel that error. Twenty two bushels of oats—allowing one bushel per week from the 15th of May to the 16th of October—may be taken as the produce of half an acre of land, and half a ton of hay that of another half acre, although a ton and a half per acre is not more than an average crop. It requires at least an acre of grass land to support a horse during the period above named.—*Mark Lane Express.*

The Yellow Lupin—A New Fodder.

Every one knows the yellow lupin as a garden flower. It is possible that many may not know its uses as an agricultural plant. The Germans and French farmers are loud in its praises. It will grow in almost any soil, and the poorer the soil, seemingly, the better the crop. It requires deep ploughing, but no manure. If the subsoil is thrown to the top of the furrow, it is no matter. The roots plunge themselves deep into the earth; the plant grows and may be used as green food for sheep, and the seeds after they have ripened, may be used in cases where bran or pollard is given. This is not a crop for rich, but for poor lands, which will grow nothing else. It grows well on dunes and sandy soils, according to the reports. On the waste lands of Pomerania pines have been planted for many years, with the expectation of profit. No one buys the pines, and the proprietors, driven to their wits' end to make the soil profitable, in a happy hour were made acquainted with the yellow lupin. In Prussia the cultivation of the yellow lupin, according to the account of Victor Borie, has brought abundance and joy into regions where formerly there reigned only misery. "Thanks to this modest and generous plant, bad lands had become good, deserts have been populated, and the wretched proprietors of sandy, barren soils, who fancied themselves abandoned by man and God, have been obliged to confess that their cruellest enemy is ignorance." The yellow lupin is the *Lupinus luteus* of Linnæus. Its external character must be known to almost every one. It answers all the purposes of green fodder for cattle and horses, and yields a useful crop of seeds besides. For the green crop, the Prussian and French sow in June; for the grain or legumes, in May. The soil must be

ploughed deep; the grains are scattered, much as for a bean crop; a harrow passed over the field and the tillage is accomplished. An English farmer should try the experiment on lands just reclaimed, or on lands upon which he has in vain endeavoured to grow an ear of wheat or a homely potato. The account we have been reading says:—The lupin grows anywhere in bad as well as in good soils: but it always seems to agree best in sand, and in soils which are of little worth, and where the subsoil is, for agricultural purposes useless." Experience seems to show that it is better to allow the crop to ripen. On this point we have no practical knowledge. When the lupins are dry, the sheep eat all—stems, seeds, and husks. Four or five quarts of grain are given with a feed of oats to a horse; for cows, three or four quarts of grain steeped, or sufficiently bruised. A Prussian declares that if he had to choose between lupins and potatoes as a productive crop on the barren soil of Prussia, he would be at a loss which to choose. The lupins are worthy of an experiment. The Germans say, "Work for the butcher and you will find the baker at your doors." The French say, "More the hay more the bread." The lupins are excellent fodder; fodder makes the beasts; beasts make manure; manure grows corn.

[The above is copied from *The Field*, and the *Irish Farmers' Gazette* remarks that the Lupin is a very suitable plant for ploughing under as a green manure. It would be well worth trying on our poor sandy and worn out lands for this purpose.—Ed. C. A.

New Zealand.

[Captain H. D. Twohy, for many years connected with the Royal Mail line of steamers on Lake Ontario, left this Province last summer for New Zealand. As he was widely known and as highly respected, we think the following copious extract from a letter of his, addressed to the Rev. S. Givens, Yorkville, and published in the *Leader* newspaper a few days since, will be interesting to many of our readers. Ed'r.]

"I must now give you some account of our journey, or rather voyage. We left Quebec on July 7th, had a narrow escape in the straits of Belleisle from shipwreck, and arrived in Liverpool on the 19th. We were disappointed in getting a ship for New Zealand direct; but God was kind to us in throwing us in the way of a ship of 1,300 tons, bound for Melbourne, the Captain of which, who, if not all we could wish, was perhaps better than most ship-masters of his class; his kindness and consideration greatly relieved the tedium of a passage of 99 days. We had only ten passengers in the ship, which was a piece of good fortune not to be obtained in every ship, they mostly carrying from 300 to 500 souls. We had no bad weather, sickness or casualty of any kind; our health was greatly improved by the voyage when we arrived at Melbourne; our baby doing the best of all. The country of Victoria, from the harbor, is not prepossessing. Some people from Ireland shed tears on seeing their future home;—a dull, sombre foliage, interspersed with sand hills; but the city is a wonder of progress; the main street seems about 20 feet wider than those of Toronto, and I saw more stone sidewalks than all the towns in Upper Canada could show collectively. One Bank, in the Corinthian style, surpassed every thing I had seen in America. A Methodist meeting-house, in the Gothic style, excelled every church in Toronto, with the exception of St. James's. Every thing appeared more finished and complete than in American cities. At the wharf were 20 ships, varying from 1,000 to 2,000 tons, discharging at the railway that leads to the city, three miles off. Every thing appears solid, substantial and costly; but we cease to wonder when we read they exported £60,000,000, in gold in the previous six years. We found every thing cheap but boat-hire; clothing as cheap as in Liverpool. We transhipped to the Mermaid, 800 tons, and after a passage of thirteen days, arrived in Aucland, New Zealand. The appearance of every thing here is in great contrast to Victoria and Melbourne; the country is delightful to look at for those who love the picturesque.

A noble harbor, sentineled by mountains rising out of the sea, ranges east and west; on the south side of which the town is built over three hills and ravines like Port Hope.

Up through the centre ravine passes Queen (the main) street, having all the appearance of Toronto thirty years since; very few brick houses, the stores small, mean in appearance, scanty in stock, no pretensions to wealth; the finest stores called the Canadian Block, are 2 two-story houses, with plate glass windows, built by a man from Montreal. Auctions in the streets almost every day, no side-walks, no gas, no cabs, few police, no direct taxes, very little crime; every one complaining of the dull times and longing for the arrval of more troops to put down the Maoris war; with a good commissariat expenditnre, electioneering going on, the outs abusing the ins, with all sorts of plans for making every one rich; embryo railroad schemes for a white population estimated this year at 72,000 souls, scattered over islands extending eight or nine hundred miles. From the top of Mount Eden, an extinct volcano, 500 feet high, about a mile from the town, you get a fine view of the country, and can count about eight extinct volcanoes within as many miles. Having no forests to clear, the country looks delight-

ful, but the gathering of stones has been quite a labour to them in the neighborhood of the mountain. There are more good stone fences in the neighborhood of Aucland than in all Upper Canada. The roads for eight miles out of town are equal to the road between Napanee and Kingston; the scoria ash, obtained from the mountains, makes excellent metal, ready broken, and resembles blacksmiths' cinders. When you get away from the stone fences, in many places fast covering up with ivy, both native and European, you find hawthorn hedges, in some places ten feet high, interspersed with the multiflowering rose; this with the furze or gorse is the prevailing hedge or fence; posts and rails are exceptions, The road-side was so filled with clover, and *sain foin* (a grass very plentiful here) in a walk I took of eight miles, that 1,000 cattle might have been pastured on it, and well fed too. In fact the country is such that every Englishman feels at home here; the roads are so smooth and the scenery so charming that you meet numbers of ladies on horseback—the pleasure of riding being enhanced by having no tolls to pay. No gates are erected and the roads have been made from the public or general revenue. All the cattle have a sleek, healthy appearance. I have not seen a lean beast since I came here. Cattle raising seems a favorite employment; you may count hundreds of cattle during a walk, yet beef is 7d. per lb. and milk 5d. per quart; butter 1s. 3d. per lb. For money merchandize is very cheap. We have not drawn our land as yet; the best land is near the seat of war; but it will not do to go there. The natives are quite numerous in the town, but they belong to friendly tribes, and are dressed in all costumes, from the clerical gentleman with white neck-cloth and black coat to the lady with hat and feathers and hoops, down to the savage in his blanket or even scantier attire. They are fast declining and must soon disappear from here; they have been spoiled and pampered by missionaries of all churches and by the government; but were they the noble race they have been reported they would not be walking the streets wrapped in a blanket, while 56,000 of them own 30,000,000 acres of this fine country. The great distance from Europe and America of this colony, coupled with the expense of getting here, has saved them from being swamped; but in less than 20 years they will be but a mere fraction of the population.

A number of people in Toronto desired me to let them know what the character of the country was; what prospect it afforded to those who were desirous of leaving Canada to seek employment. Should you be asked you can say that those who come here at present must be prepared to bring their employment with them, in the shape of money enough to keep them on the land they draw, two years before they get a crop. From all I have observed it is a land of more flowers than fruit, more grass than grain, more herds than flocks. The land is not so fertile as in Canada, but the wants of life are fewer, and every one experiences the invigorating influence of the climate. I could wish that all faithful subjects of Her Majesty who cannot live in Canada would make this their home rather than go to the United States. Here they would be exempt from ague, noxious animals and the demoralizing influence of that land of liberty. I visited the bush for a short time one day; the sight was quite novel to me, who had been a good deal in tropical countries. The fern tree growing 20 feet high and then projecting its long feather-likebranches at right angles, like the bones of an umbrella. The gickan, a palm-tree with branches, growing like the arches of a Gothic Church. The scarlet ralla, a tree as large as the largest oak, bearing scarlet flowers in profusion, with the kauri pine and the supple jack, were the most striking objects, whilst some of the smaller objects were no less beautiful. The most striking objects of the feathered creation were the ghes or parson birds, almost as large as a pigeon, with glistening raven plumage and two patches of white in the front of the neck, very active and imitating all sounds. All the water taken from the well in Aucland in localities exempt from social impurities has a very pleasant taste, and is verp soft for washing clothes.

Pine wood is very dear, 9s. per 40 cubic feet; coal £1 14s. per ton; bread 10d. the 4-lb. loaf; potatoes 1s. 7d. per bushel. We pay 10s. a week for a cottage of four rooms and kitchen; no taxes. The churches are in general all inferior to those in Toronto. We worship in a school-house thnt holds 450 people. The church is not yet built; it is to be called St. Matthew's. We heard Bishop Selwyn preach there. He officiates once a month, and sends a clergyman, Mr. Jones, to the country that day. Had we never heard the character of his Lordship, he gave us ample proof of the calibre of his mind in the continual flow of words, breathing zeal, power, humility and love with a look that at once commanded veneration and affection.

An Hour in a Pork Packing House.

Yesterday morning we spent an hour in the packing house of Messrs. Flint & Stearns, on South Clark street, near Twelfth. It is not generally understood to how great an extent the pork packing business has entered into the trade and capital of Chicago. There are several of these houses in this city and its environs, employing an immense capital.

This being the case, those who know nothing of the *modus operandi* by which one packing house can dispose of a thousand hogs in a day, will doubtless be pleased to accompany us in our savory visit.

Upon the outside of a large and substantial

brick building, the eye discovers a winding track, leading from the hog yard to the upper part of the building. Up this inclined plane a stream of live hogs are lazily groping their way. Arriving at the top they enter the slaughter house—a pen ten or fifteen feet square. In this stands a man swinging with his muscular arms a ponderous sledge-hammer. At each blow a hog falls senseless. Two men armed with hog knives follow him and finish the work of butchery by severing the arteries of the neck. This done, the poor hog is slid through a trap door into a vat of scalding water, kept constantly at almost boiling heat by steam pipes passing through the bottom.

The hog is floated along to the opposite end of the tank, where a pair of tongs, (what else shall I call them) operated by a lever, picks him up and deposits him upon a table, upon each side of which is arranged a long row of men, (scrapers), who turn out the hog at the far end of the table in a state of nudity. There are not far from 25 of these scrapers, not one of whom is idle for a single moment. As soon as a hog emerges from the vat, the one that preceded him is passed to the next scraper, continuing his journey from one end to another as each successive porker follows after.

At the end of the table he is suspended upon a revolving crane. A pailfull of water dexterously applied, gives his carcase a sleek and cleanly appearance. Meanwhile he swings around in front of a savage looking man, armed with a terrible knife, sleeves rolled up to his shoulders, and besmeared with blood from head to foot. At one sweep of that knife the hog is opened and the inwards removed. Another pailful of water prepares the carcase for the cutting block. A truck, having projecting arms, is then trundled up to the crane, and by simply raising the hands, the person in charge receives the carcase upon the extreme end of the arms, and it is then easily transferred to the hooks, where it is left to cool.

This entire operation is so simple and yet so complete, that not a hand touches his porkship during the operation of being transferred. The hogs are usually allowed to cool off during the night, when they are taken to the cutting block, where two men with cleavers proceed to prepare them for salting down. Fourteen blows generally suffice for each hog, when the several parts are thrown into a hopper, and passed through the floor to the next story below, where the packers and salters put the pork in barrels, and the coopers finish the job by heading them up. After the pork has had time to settle and dry, the brine is poured in from a vat in which it is manufactured.

The packing season usually lasts about three months. Since the commencement of the present season, about the middle of November, Messrs. Flint & Stearns have killed and packed about 13,000 hogs. The average net weight of these have been 230 lbs., an increase of 100 lbs. per head upon the average of last year.

About 75 men are employed in this establishmedt at from one to three dollars per day.—*Chicago Times*, Dec 1860.

The Eastern Prolific Corn.—The seed of the "Eastern Prolific Corn," a name which I gave it, originated, I believe, in Maine, and was first known to me about two years since although some farmers in this vicinity claimed to have raised the same kind a number of years, and obtained much larger crops than I have been able to do, thus far. Last season I raised on Elm farm, Berkley, Mass., a little more than eighty bushels of good sound corn per acre. My corn land is what would be termed plain, level, and of a light, sandy loam. I plowed thoroughly ten or twelve inches deep with "Birch's Patent Iron Beam Plow," used five loads of rich compost, and twelve bushels of ashes per acre—the ashes being used at weeding time. Planted in hills about three and a half feet apart each way, in May, 16th and 18th, putting two cords of manure in the hill. I allowed five stalks to each hill, perhaps four would have done better, cultivated both ways, and hoed about the middle of last June, and subsequently a third time, without plowing. Cut and stacked the corn the first part of September, and allowed it to remain in the field for some five weeks. The value of the crop per acre was:

Corn	$82,58
Corn fodder and improvement of land	30,00—$112,58

The expense of cultivation was for

5 cords of manure on land	$40,00
12 bushels of ashes	2,00
Plowing, planting and hoeing	14 00
Harvesting	7,00
Interest on land, taxes and seed, about	7,00—$70,00
Net profit per acre	$42,58

Taunton, 1861. D. S. Dickerman.

—*New England Farmer.*

Artificial Guano.

A desire to obtain an artificial guano, equal to that of Peru, and at a moderate cost, has long been manifested. We take the following article from a recent number of the *Scientific American.* It is from the pen of Dr. G. A. Gesner, F. G. S., of Nova Scotia, who is well-known for his scientific researches in chemistry and geology as applied to the agricultural resources of our Eastern Provinces. Mr. Bruce, of Montreal, has manufactured a manure from the fish-offal of the Gulf of St. Lawrence, mix-

ed with mimeral matters, that is a very valuable and powerful fertilizer. We hope to hear more of this soon.

Guano, so valuable a fertilizer, is chiefly com posed of the excrements of sea fowls. Frequently it contains feathers, bones of fishes, humus, &c. It is very variable in composition, a circumstance that has been ascribed to the different kinds of foods upon which the birds subsisted. Some guanos contain upwards of 25 per cent. of uric acid, in others that acid is almost entirely absent, and it is the same in regard to other acids, salts and alkalies. Ammonia usually enters largely into the best qualities of this fertilizer, and the presence of its carbonate is known by its odor. The oxalate, urate and phosphate of ammonia and magnesia are almost always present with the phosphates of soda and lime, the phosphates having been derived from the bones of the fish upon which the birds fed. In the supply of ammonia and of earthy and alkaline salts, guano is of the greatest value for plants cultivated for food. The food of the birds from which the guano had been deposited has been certain fish that fed upon other fish, the food of which was marine plants, or animalcula. The origin of this fertilizer is therefore found in marine plants and animals.

The writer has obtained a product analagous to the true guano, and one nearly, if not quite, equal in its value for fertilizing purposes. Chemical and mechanical means have been applied to the marine *fuci* and fishes and fish offal until an artificial guano has been obtained. The sources of the alkaline carbonate, chloride of sodium and organic matter have been found in marine plants, the phosphates and carbonates of lime and ammonia in the bones and flesh of fishes, and after many experiments carefully performed, they have been combined so as to form a cheap and portable manure. At Long Island, in the State of New York, *menhaden* are manufactured into manure: the oil, which is very offensive, being extracted from the fish and employed for common purposes.

Having visited a great number of the fishing establishments of the Provinces of New Brunswick, Nova Scotia, Newfoundland and the islands and coasts of the Gulf of St. Lawrence and Labrador, the writer obtained a knowledge of the vast quantity of fish and flesh offal annually thrown into the sea, or otherwise lost to every useful purpose. The garbage thrown overboard yearly from vessels fishing on the Banks of Newfoundland, if properly preserved and manufactured with the annual growth of sea weeds upon the shore, would fertilize the entire cultivated surface of the Eastern States and British Provinces; still the amount of animal matter thus referred to is far less than that produced by the inshore fisheries.

To the foregoing may be added the enormous quantities of mytili and other shellfish growing upon the shore, and which are not less applicable for the manufacture of artificial guano, than the offal of the finny tribes. At many places on the shores, fish are met with in such abundance that they are employed by the fishermen to manure the small patches of ground some of them cultivate. At the principal fishing stations, the refuse garbage and bones alone would supply a manufactory, and with good management and the use of kelp, the offal may be transported from place to place without inconvenience. Like the bones of terrestrial animals, the inorganic matter or ash of the bones of fishes consists in the greater part of the phosphates of lime, or bone phosphate, with carbonate of lime, the fertilizing properties of which are well understood. Few soils preserve their fertility for any length of time. Every crop removes from the earth certain elements, which it is the business of the farmer to restore, and for that purpose no manure is better adapted than guano, either natural or artificial.

Peruvian Guano.

In connection with the above the following article, from the *Irish Country Gentleman*, will be found interesting. Guano has for a few years past been used in Canada, on a small scale, by our more enterprising farmers, chiefly in the raising of root crops, with satisfactory results. Peruvian Guano comes very expensive; it is in fact a monopoly. The government of Peru fix the price of it, and farm it out to a great company, who charge from $40 to $50 a ton. This has occasioned great discontent, among British farmers especially. Guano should never be allowed to come in contact with the seed, and is best applied mixed with dry soil. It requires moisture to bring it into action; hence its effects on vegetation in warm, showery weather are truly astonishing:—

"Peruvian guano is the most concentrated manure with which we are acquainted; and, under certain circumstances, it exceeds all other substances in its fertilizing influences. A manure is valuable in proportion to the amount which it contains of three substances—*ammonia, phosphate of lime.* and *alkaline salts* (compounds of potash and soda with acids). The portions of these ingredients present in farmyard manure are shown in the following figures, and are the average results of several analyses made by ourselves:—

100 PARTS OF FARMYARD MANURE CONTAIN:—

Ammonia	0.450
Phosphate of lime	1.750
Alkaline salts	1.300

The great superiority of guano over farmyard manure will be seen from the following statement, which gives the average results of several hundred analysis of this substance, made by us during the last six years :—

100 PARTS OF PERUVIAN GUANO CONTAIN :—

Ammonia	16
Phosphate of lime	22
Alkaline salts	9

The use of guano, as a manure, was long known to the Peruvians, and so highly was the article valued, that the *Incas*, the ancient rulers of Peru, at one time attached the penalty of death to the offence of killing the 'manufacturers' of the article—the sea fowl that haunted the coast.

Sir Humphrey Davy was the first who suggested the employment of guano in British husbandry. This was in the year 1810; but the distinguished chemist's advice was not acted upon till thirty years afterwards. In 1840, a small quantity of the article was imported by Mr. Meyers, of Liverpool, which, on being applied as a fertilizer, produced such wonderful results that in the following year the large quantity which was imported was readily bought up, and ever since, the annual demand for guano in Britain has only been satisfied by the enormous supply of from 200,000 to 300,000 tons. The great demand for this curious substance induced enterprising merchants to explore other regions than Peru in search of a similar commodity, and with considerable success, as guano is now imported in large quantities from various countries. With scarcely an exception, the guano found in every locality, except on Chincha islands, the other places along the coast of Peru, contains but a small proportion of ammonia in relation to the amount of lime; and, as it is an established fact that certain crops requires more than others do, an abundant supply of phosphate of lime, it is very desirable that the farmer should know the composition of the various kinds of guano, in order that he may apply the most suitable kind to his crops, as the time for purchasing artificial manures is rapidly approaching."

The Culture of Tares.

EDITORS OF THE AGRICULTURIST.—As you invite those who have had any practical experience in the culture of tares to send you the result of it, I take great pleasure in communicating to you the following—considering the circumstances of the case—satisfactory trial of them.

Having for some time resolved to sow a small quantity of land with tares, as an experiment, I procured from Mr. Fleming, Toronto, a peck of seed, and, on the 16th May, I sowed it on a quarter of an acre. The land was ploughed, and well manured in the fall, and thoroughly cultivated in the spring. Shortly after they came into pod, I cut them, and found, when *cured*, there was *at least* three quarters of a ton. It made excellent fodder; in fact the horses, cattle, and sheep devoured it with avidity. Had the seed been sown at the proper season I am confident there would have been twice the quantity; but, as it was, before the tares had grown enough to cover and shade the ground, the weather came very dry, and scorched the land, so that, at one time, I thought they would prove a total failure—a few showers, however, settled that point. A SUBSCRIBER.

London, April 1861.

Agricultural Intelligence.

Spring Shows to take place.

Yonge Street Agricultural Society, at Richmondhill, May 23rd.

Niagara Electoral Division Society, at Niagara, June 27th.

Kingston Electoral Division Society, at Kingston, July 3rd.

On the Care of Live Stock.

The following paper was read by a young farmer, Mr. J. M. Joness, at a recent meeting of the West Durham Farmers' Club :—

MR. PRESIDENT AND GENTLEMEN,—The severity of the Canadian winter renders it not only expedient but necessary for all who intend raising stock to have good shelter as well as suitable food for them, and as the wheat crop has been a comparative failure in some parts of the country for the last few years, from the ravages of the midge, the importance of raising stock of all kinds is greatly increased. The question is, how can we winter our animals most profitably? We believe the farmer who takes the best care of his stock will eventually reap the greatest reward, at any rate we think the subject important, and have no doubt it will receive the attention of every intelligent farmer. There is one point upon which we all agree, which is, that all animals of whatever description should be kept in such condition that they will be constantly improving until they arrive at full maturity; and to accomplish this they must receive such treatment during the winter that they may be turned out in the spring in as good condition as when taken into the yard in the fall. To do this it is required to have warm, comfortable, and well ventilated stables, as well as the proper kind of food to nourish the animal and prevent the waste of the system. Yet there is a great di-

versity of opinion as to the manner of sheltering stock. Some farmers, and I think the greater majority, believe that stabling is preferable to any other way, while others contend with equal confidence, that the barn-yard, with suitable sheds attached, is better than stabling. Their argument is, that the animal will never remunerate them for the expense of erecting buildings for their accommodation and the extra labor of feeding, while the former maintain that by keeping the animal in a warm stable less food is required, as little is expended in keeping up the animal heat. This I think is a good argument, and I intend trying to show how this is the case. According to the science of physiology the heat of the body when in a state of rest, is the same on every part of the earth's surface at all seasons of the year. Blood heat in domestic animals is 100 Farenheit in the hottest day of summer, and should be kept up to the same point in the very cold weather, and according to one of nature's laws, when a hot substance is brought into contact with a cold one, the heat immediately begins to leave the one and becomes absorbed by the other until they become of equal temperature; thus it is plain to be seen, that if an animal is surrounded by a very cold atmosphere, the animal heat will be given off, and unless a fresh supply is provided the temperature of the animal becomes reduced to that of the atmosphere, and death would often be the result. Now suppose we enquire what this animal heat is, and how it is produced. After food is taken into the stomach it undergoes many changes,—a part of it is converted into blood, portions of which are carbon and hydrogen, which, when brought into contact with the oxygen of the air which is brought into the lungs by breathing, a union takes place and heat is given out, just in the same manner as wood gives heat when burnt in a stove. Combustion is the same in both cases, only that it is much more rapid in the case of the latter than in the former. This I think will not only show what animal heat is, but also that it is expended much faster in cold than in warm weather. If this be the case, then the necessity for having warm and comfortable stables for stock must be apparent to all; at all events, we have concluded to furnish ours with a genial atmosphere, and save our fodder. Perhaps I have dwelt longer upon this part of the subject than was necessary; but we think it is time the matter was understood, and some plan other than an increased amount of food devised to keep up the animal heat during our cold winters.

Much care should be taken with calves until they become a year old. Be sure they have a plenty of such food as will give them bone and muscle from the time they are taken from their dams. Carrots or turnips may be used, give as much hay as they will eat, and I think a little meal will be found very beneficial.

I do not think it advisable to tie up animals at this age, but let them have plenty of room in a well littered stable: if you are raising many—say six or eight—we would recommend dividing them into two or three lots instead of allowing them all to eat at the same manger. We would also provide them with water in the house, and only let them out when the weather is very fine. After they become a year old, they may be tied in the stall during the night, where they should be fed roots and hay, and be turned into the yard by day, where water should always be provided for them. This is often neglected, and the animals have often to walk a long way to water or go without, which they will often do in very rough weather. I think every farmer who studies his own interest as well as the comfort of his stock, will see the utility as well as the convenience of having water provided for them in the yard. A good animal is worth keeping well, a poor one is not worth keeping at all. When fattening cattle is practised during winter, (and it is becoming very prevalent among farmers since the growing of roots of every description has become so general) strict attention is necessary. The animal selected for that purpose should be full grown, and in good condition in the fall. Our custom is to tie them up as soon as the pastures fail and the rough weather commences: give them plenty of turnips and hay. To an animal which when fat would weigh from eight to nine hundred, give about a bushel at a feed, and three times a day, always keeping plenty of good hay before them. For the last six or eight weeks give them about four quarts of corn or pea meal extra. This seems to give them a fresh start, and we have invariably succeeded in making them first class beef at Easter. During all this time they should be kept as quiet as possible, never being disturbed except at the regular hours for feeding.

Sheep.—Stock sheep should have plenty of room in a house with a small yard attached, and I think should always have access to water, as the quantity of roots which it would be advisable to give them would not be sufficient to supply them with that article. Lambs and those that are fattening should have sufficient roots to prevent the necessity of having water, and should be fed a little grain every day, always keeping a good supply of hay or pea-straw in their crib. Roots, I think, should always be cut for sheep, as experience teaches us that they injure their teeth when fed to them whole. All kinds of roots should be housed as clean as possible; they will keep better and do more good: dirty roots always have a tendency to scour the animal fed on them. I fear that I am trespassing upon your time; but I cannot close without saying something about that noble animal, the Horse, the animal upon which the farmer in this part of the country depends more than all the domestic animals together; yet, strange to say, he is often

neglected, and sometimes allowed to suffer during our cold winters. But we hope the time is near when the horse, as well as all other animals, will be better cared for. If you wish to have your horses thrive and continue healthy, you cannot pay too much attention to their comfort. Their stables should be warm in winter and cool in summer; to secure these conditions they must be properly constructed, so that the outside air (except so much as is required for ventilation) may be excluded during the coldest weather. Warm blankets should be provided for working horses. Ventilation in stables constructed for horses is of much greater importance than in those for cattle. Colts should be taken great care of during their first winter. They should have a commodious house, well littered, but without a floor; as it is found that by standing upon a dry floor the hoof is subject to become brittle. We practise feeding them carrots and hay twice a day, and about three pints of grain once a day. Much care should be taken in feeding grain of any kind, as it is liable to contract the feet when fed in large quantities. Many a colt has been spoilt by being fed too much grain when young. Horses that have to work during winter should have grain twice a day, as well as roots and hay, and should be fed regularly at stated times, and in much larger quantities than in summer, especially in very cold weather. Carrots, I think, should be the roots fed to working horses, as they contain less of the fattening quality and more of that element which gives muscle than either the turnip or mangel. I refrain from saying anything more at present, and leave the subject with those better qualified to do it justice.

The Effects of High Feeding for Show.

[The *Mark Lane Express* thus notices the death of some famous Shorthorns from over feeding for purposes of exhibition. Let us take warning:]

"The Queen of Athelstane," the first prize yearling heifer at the Dumfries Meeting of the Highland Society, died during the past weeks when she was just two years old. This really beautiful heifer was bred by Mr. Douglass, of Athelstanford, and was by Sir James the Rose, out of Ringlet, by Frederick, her dam Pearly by Royal Buck. We had to speak of her in high terms in our report of the great northern meeting, where the Queen also attracted the notice of Lady Pigot, who subsequently brought her south at the price of five hundred guineas, and in whose possession the heifer died at Branches Park. She was said to be in calf to Lord of the Valley. The cause of her death was inflammation of the bowels, not the unfrequent end of over fed cattle, either from indigestion or on any exposure to cold. Her ladyship has only recently lost another promising heifer called Ethelgiva, from the same cause, out of Duchess of Gloucester the 2d, a prize cow at Canterbury; and Lucy, another of Lady Pigott's herd, bought at Wetherell's sale, for 150 guineas was killed, at Christmas, as butcher's beef. Her ladyship feeds high, and it was only during the past year that we had to notice her exhibiting a heifer in one week as a fat beast, and in the next as a breeding animal! Mr. Douglass also brings his stock out very full of flesh, and as a consequence his famous Venus de Medici has never qualified; while the sweet Maid of Athelstance, an own sister to the Queen of Athelstane, stood upon the extra stock at Dumfries from never having had a calf. What a commentary all this is on our remarks of last week, on Mr. Fawke's protest, and on Mr. Carr's letters. Of course the poor Queen of Athelstane was in training for the Leeds Meeting, or in other words being pampered up like a bilious alderman, or an over crammed turkey, who drops down with the last ball of barley meal in his throat "What really is the meaning of bringing an animal out properly for showing?" Would not killing be a better reading for such a state?

May Fair and Monthly Market.—Guelph May Fair has for many years had the character of being *par excellence* the busy day of the trading community of the town. The fair this year scarcely maintained the *prestige* it has acquired. The weather recently has been inclement, the season is late and the farmers are in arrear with their ploughing and sowing. Tuesday night was cold and boisterous and the morning of Wednesday—the Fair-day—showed the streets, and the hills in the neighborhood covered with snow, which melting as the sun went south, rendered the roads in the vicinity, previously sufficiently bad, almost impassible. There were nearly 200 cattle brought to town, however, comprising several fine lots of prime fat, which were speedily purchased by dealers from the South, at higher prices than were obtained at the April Market. Mr. Scott, of Eramosa obtained $4 per 100 lbs. live weight for four fat cattle, and another party sold two prime fat cows for $70 each, which it was calculated was equal to at least $ 4¼. There were fat cattle, however, sold as low as $3½, the average, as computed by the Secretary of the County Agricultural Society, being pretty nearly $4.

Milk cows were in request, and brought from $20 to $30. Fat stock was evidently in demand and more than were offered would readily have found purchasers at remunerative prices. It was rumored, perhaps on no sufficient authority, that purchases were made to furnish rations for the Federal troops. Should such be the case, we shall doubtless soon learn that such unwonted 'feed' has put them in a condition to hurt somebody.—*Guelph Herald.*

Cost of Threshing.—A correspondent of the *Northwestern Farmer* claims that the cost of threshing by large eight horse power machines, causes to farmers a great less. His estimate, from a practical acquaintance with the work is as follows:

"We will admit that with a good Thresher, good stout horses, a full complement of men to handle grain and stack the straw, and with good weather and favorable wind, there can be threshed and *partially* separated, in a day *two hundred and fifty bushels of wheat.*

"The cost of this day's work I estimate as follows:

To the Thresher, [he furnishing machine, 4 horses and 3 men] 4c per bush.		$10.00
13 hands exclusive of above, 75c per day.		9.75
4 horses furnished by farmer, 50c	"	2.00
Board of 16 men, 30c	"	4.80
Same for 8 horses, 25c	"	2.00
Putting 250 bush. through Fanning mill at 1½c. per bushel,		3.12
Total,		$31.67

Being a small fraction less than *twelve and a half cents per bushel*; leaving out of the account all contingencies, such as changing position of machine and horse power, breakages of machinery, rainy weather and adverse winds, which in a majority of instances would swell the cost very materially. It is evident, therefore, from the foregoing estimate, that there is a balance of just *five cents* per bushel in favor of the old mode, as compared with the modern improved, Eight Horse-Hower Threshers."—*Michigan Farmer.*

Horticultural.

Cobourg Horticultural Society.

We received some time since a Report, which unfortunately got mislaid, of this young and flourishing Society, whose operations have extended over only two years. The Directors say:

"It is with great pleasure we congratulate this Society on the continued success which has attended it during the second year of its existence; we would not attribute this success to our management, but to those spirited members, who, at great sacrifice of time and much personal exertion have by their example, stirred up that spirit of emulation which is the life-blood of all such societies as ours, and without which failure would be the inevitable result.

* * * * * * * * *

Our Fall show was remarkable in one particular, which we would here chronicle. *The Vegetable productions were astonishing.* Several of your directors had an opportunity of comparison by being present at the Provincial Fair at Hamilton and other local societies' Shows, and they certainly feel called on to say this much, that the display made by the Cobourg Horticultural Society, in this particular department was altogether the best they had been privileged to see, affording proof that our particular locality is peculiarly adapted for growing the *most profitable* garden products.

The number of members, each paying a dollar for the past year, was 88, and the financial condition of the society is good, the Treasurer having a small balance in his hands. We shall be glad to hear of the continued prosperity of this young and energetic society, and trust that Horticulture is destined to receive similar encouragement as Agriculture has long experienced in the old Newcastle District, and that the anticipation of the Directors will be fully realized "in obtaining a very large membership for 1861, especially as they see so many evidences that the dark days of Cobourg are with the past."

Culture of Annual Flower Seeds.

The soil for these should not be over rich, and should be dug deep; the surface should be rendered smooth and fine before sowing the seed; *small seeds sown on rough ground fall between the clods and into the crevices and get buried.* Attention to this simple hint will save growers much disappointment, and seedsmen a great amount of blame; for, in cases of failure, the quality of the seeds is almost invariably impeached. Hardy Annuals may be sown from the middle to the end of September for spring flowering; the plants ought to be thinned out before winter, to prevent their damping off, and transplanted early in the spring, to the flower border, or, when more convenient, may be sown where they are to bloom. Many of the Hardy Annuals, especially the Californian, flower more profusely, produce finer blossoms, and remain longer in perfection during the spring months than at any other season of the year. For summer and autumn flowering, sow from the middle of March to the middle of June. A common error in the cultivation of Annuals is in allowing them to grow too close together; and many, of what would otherwise be an attractive bed of Annual Flowers, are ruined for want of thinning. We therefore say, thin early, and sufficiently to afford ample space for the perfect development of the plants left. It is also very important to afford support to such kinds as require it before they get broken or injured by wind or heavy rain; perhaps the simplest way of doing this is to place among and around the plants small neat branches, like pea stakes; the lateral shoots will extend among and hide the stakes, and the

support afforded by this simple and inexpensive means will in most instances be found all that is required. But perhaps the common practice of *covering the seeds too heavily,* causes more disappointment than all other errors. Small seeds should be covered very lightly, and with soil not liable to cake by exposure to sun and air. *Common garden loam and leaf soil, or old dung,* passed through a fine sieve and well intermixed, will be excellent for covering with. Half Hardy Annuals should not be sown in the open border before May, and the ground will require the same preparation, &c., as recommended for Hardy Annuals. But the best method of raising these is to sow in pans, or boxes, in April, or on a bed, about three inches thick, of light soil, placed on a gentle hot-bed formed of stable manure or vegetable refuse, and protected with a frame or hand-glass. Water sparingly and give plenty of air when the plants appear, and thin out, or prick off in small pots, and be careful to get plants well inured to the weather previous to planting in the open border, and also to give water as may be necessary, after planting, till established.—*Hand Book of Annual Record.*

Improved Hollyhocks.

A taste for this fine old flower has of late been reviving both in Europe and America. *The Gardener's Monthly* says:—

"Radical shoots, taken off as cuttings in the spring, no doubt give the strongest spikes, but they may be easily propagated by single eyes in July and August. Plant eyes in March; the former month is best for early flowering, the latter for very late blooming. Never plant on new ground or in maiden earth, but choose a soil that has been well worked, and if well trenched, so much the better."

In Mourning.—The gardeners of Great Britain are mourning over the deaths of many of their most valuable productions, occasioned by the severe winter, and don't seem willing to be comforted. The horticultural journals are filled with obituary notices of the loss of many of the finest ornaments of the lawns and grounds, which the keen and unwonted temperature of five or six degrees below zero has converted from a delight for the eyes into only material for faggots.

The Poultry Yard.

Do you want Eggs in Winter?

Then give the manufacturers materials to make them with, and a comfortable place to work in. Let the egg-less say what they will, we speak what we know, when we assert that it is perfectly feasible to keep the hens laying all winter. Give them animal food to supply the place of insects they catch in summer, and then let them have a warm place to run into, with plenty of unfrozen water, not snow, and a frequent taste of green food, such as cabbage leaves, potatoes, &c., and remember to supply some gravel for their grinding-mill, and lime to make shells out of, and we will warrant the animals to repay all the care and food, in nice plump eggs—no matter what the particular breed may be. Try it.

A hen without some kind of meat and gravel, and lime, compelled to eat snow for water or go without, cannot make eggs. If she has to keep constantly changing from standing on one foot to the other to keep both from freezing, she can't stop to think about getting up eggs. If all she eats and can digest, must be expended in keeping the heat of her body, she has nothing left to turn into eggs. If her body is all shrunk up with cold, she hasn't room inside for an egg of respectable size, and though her instincts may sometimes induce her to produce a thin shelled "pullet's egg" at the expense of the lime of her bones, her pride revolts at such a dwarfed production, and she seldom furnishes beyond two or three.

Give Madam hen the odd bits of fresh meat, and the other fixings named above, not forgetting the water, and make her quarters so free from cold air holes that she is *comfortable,* and she can't help giving attention to her natural occupation of manufacturing eggs, much to her own satisfaction and the profit of her owner.—*American Agriculturist.*

Treatment of Hens.—Two flocks of hens were compared. One laid eggs almost all the time; the other scarcely any. On examining their treatment, the following differences were found to exist: the former had a warm cellar to roost in during the winter; the latter roosted in a stable where the wind blew in. The former had a fine place on an open cellar for scratching among the ashes, lime, and earth; the latter scratched in the manure heap, or in the stable when the cows were put out. The former had plenty of good water, with milk, &c.; the others had no drink, except what they could find.—*Rural American.*

Veterinary.

Bots and Bot Insects.

[In Mayhew's *Illustrated Horse Doctor,* we find the following excellent description of the bots, and the uselessness of attempts to destroy them:]

No animal which has not been turned out to graze during the summer months can possibly be troubled with these parasites. Such annoy-

ances form no light argument against the benefits accomplished by that which is, in slang phrase, termed '*Dr. Green.*' The appearance of the coat, and aspect of unthriftiness, after a run at grass, generally declare bots to be present within the body.

Uninformed persons are always desirous to possess some medicine which will destroy bots; they wonder that science lacks invention sufficient to compound such an agent. An anecdote may probably dispel such astonishment.

A patron of the Royal Veterinary College was once conducted by a pupil through the museum belonging to that establishment; the pair at last stood before the preparation of a horse's stomach eaten through by, and also covered with, bots.

'God bless my soul!' exclaimed the visitor, after the nature of the specimen had been explained. 'What a spectacle! What a myriad of tormentors! And have you no medicine to remove such nuisances? Can veterinary science discover nothing capable of destroying those parasite?'

'Why, sir,' replied the student, 'only look at that preparation. To my knowledge, it has been put up in spirits of wine, and corked air tight for two years. The creatures must be either very dead or very drunk by this time; yet, as you witness, they hold on. What sort of physic could accomplish more than is already effected by the spirits of wine and close confinement? I am at a loss to conjecture!'

For the above, the author is indebted to the admirable lectures delivered by Professor Spooner; but the conclusion drawn by the student must be more than satisfactory. Bots, once within the stomach, must remain there till the following year; when being matured, their hold of the lining membrane of the viscus will relax, and, in the form of a chrysalis, they are ejected from the system. No medicine can expedite the tranformation. It has hitherto appeared easier to kill tne horse than to remove the parasite.

To the invertigation of Bracy Clark, Esq., V. S., the public owe all their knowledge of the fly, whence the bot is derived. The common parent, according to the above authority, is the œstrus equi; and the author gladly avils himself of the original description by the above-named talented gentleman.

'ON THE ŒSTRUS EQUI, OR THE STOMACH BOT.'

'When the female has been impregnated, and the eggs sufficintly matured, she seeks among the horses a subject for her purpose, and approaching him on the wing, she carries her body nearly upright in the air, and her tail, which is lengthened for this purpose, curved inwards and upwards; in this way she approaches the part where she designs to deposit the egg; and suspending herself for a few seconds before it, suddenly darts upon it, and leaves the egg adhering to the hair; she hardly appears to settle, but merely touches the hair with the egg held out on the projecting point of the abdomen. The egg is made to adhere by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares a second egg, and poising herself before the part, deposits it in the same way. The liquor dries, and the egg becomes firmly glued to the hair: this is repeated by these flies till four or five hundred eggs are sometimes placed on one horse.

'The skin of the horse is usually thrown into a tremulous motion on the touch of this insect, which merely arises from the very great irritability of the skin and cutaneous muscles at this season of the year, occasioned by the heat and continual teazing of the flies, till at length these muscles appear to act involuntarily on the slightest touch of any body whatever.

'The inside of the knee is the part on which these flies are most fond of depositing their eggs, and next to this on the side and back part of the shoulder, and less frequently on the extreme ends of the hairs of the mane. But it is a fact worthy of attention, that the fly does not place them promiscuously about the body, but constantly on those parts which are most liable to be licked by the tongue; and the *ova*, therefore, are always scrupulously placed within its reach.

'The eggs thus deposited I at first supposed were loosened from the hairs with the moisture of the tongue, aided by its roughness, and were conveyed to the stomach, where they were hatched: but on more minute search I do not find this to be the case, or at least only by accident; for when they have remained on the hairs four or five days, they become ripe, after which time the slightest application of warmth and moisture is sufficint to bring forth in an instant the latent *larva*. At this time, if the tongue of the horse touches the egg, its *operculum* is thrown open, and a small active worm is produced, which readily adheres to the moist surface of the tongue, and is from thence conveyed with the food to the stomach.

'At its first hatching it is, as we have observed, a small active worm, long in proportion to its thickness, but as its growth advances, it becomes proportionably thicker and broader, and beset with bristles.

'They are very frequent in horses that have been at grass, and are in general found adhering to the white insensible tissue or coat of the stomach.

'They usually hang in dense clusters to this white cuticular lining of the stomach, and maintain their hold by means of two dark brown hooks, between which a longitudinal slit or fissure is seen, which is the mouth of the larva. When removed from the stomach by the fingers by a sudden jerk, so as not to injure them, they will if fresh and healthy, attach themselves to any loose membrane, and even to the skin of the hand. For this purpose they sheath or draw back the hooks almost entirely within the skin, till the

two points come close to each other; they then present them to the membrane and keeping them parallel till it is pierced through, they expand them in a lateral direction, and afterwards, by-bringing the points downwards towards them selves, they include a sufficient piece of the membrane, to remain firmly fixed for any length of time as at anchor, without requiring any further exertion.

'These bots, as is also the case with two or three other species, pass the autumn, winter and spring months in the stomach, and arrive about the commencement of the summer at their full growth, requiring a twelvemonth fully to complete their structure.'

Distemper in Horses.

Dr. Dadd in the *American Stock Journal* remarks of distemper in horses:

About this season of the year we may expect to hear of a number of horses being attacked with influenza, or distemper, in stables that are crowded with "sale horses," and where the principles of ventilation are entirely disregarded. The disease is very apt to extend from the mucus surfaces of the nostrils, to the throat and interior of the air cells of the lungs; usually, however, the throat is the seat of soreness and exudation; while in some cases which have lately occurred in this city, a very profuse discharge from both nostrils was observed, which ended in a critical outburst of an abscess between the angles of the lower jaw. In two cases that have lately come under my observation, the disease ended in pleurisy, and effusion of serum into the cavity of the chest, which was attended with dropsical swellings in the legs, and external parts of the chest.

When distemper occurs in the system of an animal debilitated by previous disease, or one of a morbid or scrofulous diathesis, a profuse and protracted nasal gleet remains, and this is accompanied by tumefaction of the thyroid glands in the region of the throat. The purulent discharge from the nostrils need not occasion any anxiety on the part of the owner of the horse or the medical attendant, for as it increases in quantity, the other observable symptoms of the malady grow milder; in fact the discharge may be considered an effort, on the part of nature, to rid the system of morbific matter, and any attempts by injudicious treatment, to arrest this salutary discharge may effect a translation of disease, which often ends in death. Death may, however, be occasioned by the re-absorption of the morbid nasal discharge; under such circumstances the nasal membrane takes on a livid look, and streaks or spots of extravasated blood are observed; the membranes of the eyes assume a dark red color, the pulse becomes indistinct; cold sweats bedew the body; the patient becomes emaciated, loses his appetite and soon after, his life. In a few solitary cases a partial recovery takes place—death refuses to receive a victim—the animal lives to be the subject of confirmed heaves or broken wind.

Treatment of Distemper.—The animal should be placed in a comfortable location, where he can breath pure air, and be free from annoyance of every kind; should the weather be chilly, the body may be lightly clothed, and the lower part of the limbs bandaged with flannel. It is very important that the surface of the body be kept warm, for when cold, the equilibrium of the circulation is disturbed; the blood then localizes itself about the internal organs, and produces congestion; a condition very unfavorable, in view of the speedy restoration of the sick creature.

It should be understood by every husbandman that this affection is of a prostrating nature, that the object in the treatment of the malady is to husband the animal powers—*keep the horse alive while the disease runs its course*—and preserve the tone of its system by administering tonics and diffusable stimulants; a few doses of golden seal and ginger, accompanied by a rationale allowance of scalded oats, small quantities of hay, and water enough, are generally all that is needed by way of treatment. And if this course be pursued the animal will recover, very little the worse for having had the distemper. A mild form of this disease is often made to assume a typhoid or putrid type simply from meddlesome medication and overdosing, with agents which depress the vital powers, by bleeding.

No matter what may be the stage in which we find the disease, the treatment must be life-sustaining; no kind of treatment which contemplates a depression of vitality is at all admissable—this is my experience after a practice of many years—the most intelligent and liberal-minded physicians of the present day depend more on *nature* than art, in the treatment of distemper.

Should swellings appear under the chest and limbs, the proposed plan of treatment is not to be materially altered, only add to the golden seal and ginger, a little iodide of Potass; this agent is a glandular stimulant, and augments the function of the absorbents which take up the fluid and thus reduce the swellings, which are of a dropsical character. The proportions of the above agents are as follows:

Golden Seal, powdered,		2 ounces.
Ginger,	"	1 ounce.
Iodide of Potass,	"	3 drachms.

mix, and divide into twelve parts, and give one night and morning in food or gruel.

It may happen that the animal is unable to swallow, in consequence of soreness of the throat, as the saying is; in such a case we merely apply some stimulating application to the region of the throat, and wait awhile; soon the soreness

subdues and the patient can then swallow all he needs and as much as nature requires.

The best stimulating application for the throat is

Cod Liver Oil,	4 ounces.
Tincture of Casicum,	1 ounce.

Another perhaps equaliy as good;

Olive Oil,	6 ounces,
Spirits of Hortshorn,	2 ounces.

A portion of either of the above preparations may be rubbed into the thyroid region twice, daily. Under the above mode of treatment I have found that recovery is not only soon accomplished but perfect.

Cure of a Bone Spavin.

Levi J. Reynolds, in the *New England Farmer*, thus states how he effected a cure of a bone spavin:

I have a fine mare, which, three years ago, became very lame from a bone spavin on the inside of the left hind leg. After pretty hard driving for several days, she became so lame that she was unfit for use. The spavin was very tender, and she rested the foot constantly on the toe when she stood. I took her to the blacksmith and directed him to put on a shoe without any toe cork, and with blunt heel corks two inches long. She immediately travelled much better, and when she stood, rested the foot on the toe and heel corks, thus relieving the contracted cord of the strain to which it had been constantly subjected. In a short time the inflammation and tenderness subsided. The swelling abated, she travelled very well. She wore off the inside cork faster than the outside one, when she began to be lame again. I then had the shoe reset and the corks made of the same length, and she soon became well. After a few weeks I had the corks shortened a little, and the next time she was shod, a liitle more, but still have her wear heel corks an inch or more in length. There is a slight enlargement of the bone whe e the spavin is seated, but she performs hard service, and is not at all lame. Several of my neighbors have applied the same remedy, with equally good results, and I think that a little thought and observation will satisfy any one that tl is is the appropriate remedy. The cords attached to the part where the enlargement is seated, become inflamed and contracted, and raise up the heel from the ground. When the horse brings the heel to the ground the cords are strained, and became irritated and inflamed. The long corks keep the heel raised permanently, and thus prevent the cords from being strained, and allow the inflammation to get well. Some enlargement and a slight degree of stiffness may remain, but seldom enough to affect the gait.

Transactions.

Abstract of Reports of Agricultural Societies received in the year 1860.

(*Continued from page* 286.)

NORTH OXFORD.

County Society.—One hundred and twenty-seven members; amount of subscriptions, $130; balance from previous account, $149.25; deposited by township branches, $350.50; received for services of horse owned by Society, $234; government grant, $479.98; total receipts. $1343.73. Paid township branches, $659.89; paid on account of purchase and keep of stallions, $397.10; paid in premiums, $212; expenses and sundries, $61.46.

TOWNSHIP BRANCHES.

Bleinheim.—Two hundred and eighteen members; subscriptions, $234; balance from previous year, $288.84; public grant, $120.37; sundries, $59 76; total receipts, $702.97. Paid in premiums, $338.75; expenses, $42.79; balance in treasurer's hands, $321.43.

East Nissouri.—Twenty-nine members; subscriptions, $35; balance from 1858, $28.52; government grant, 47 23; total, $110.75. Paid in premiums, $96.75; expenses, $13.25; balance in hand, 75c.

East Zorra.—Fifty-nine members; subscriptions, $64; balance from previous account, $5.25; special subscriptions and entries, $79.50; government grant, $50.15; received in payment of a note, $120; total received, $318.90. Paid in premiums, $94.50; paid on notes, $173; expenses and sundries, $27.52; balance in hand, $14.88.

West Zorra.—One hundred and two members; subscriptions. $102.25; balance from preceding year, $68.52; public grant, $70; total received, $240.77. Paid in premiums, $128.50; expenses, $17.75; balance in treasurer's hands, $94.52.

SOUTH OXFORD.

County Society.—One hundred and forty-eight members; subscriptions, $148; balance from 1858, $267.80; deposited by township branches, $206.50; government grant, $479.98; total received, $1102.28. Paid township branches, $474.48; paid premiums, $330; expenses, $96,25; balance in treasurer's hands, $201.05.

TOWNSHIP BRANCHES.

Dereham.—Fifty-one members; subscriptions, $53; public grant, $75.56: received on a note, $74.54; total received, $203.10. Paid in premiums, $171.75; expenses, $16. 13; balance in hand, $15.22.

Norwich.—Ninety-six members; amount of subscription, $100.50; balance from previous year, $79.61; public grant, $137.43; sundries, $1.12; total, $318.66. Paid in premiums, $184.75; expenses, &c., $65.44; balance in treasurer's hands, $68.47.

East Oxford.—Forty-two members; subscriptions, $48.50; balance from previous year, $102.45; government grant, $74.89; total received, $225.84. Paid in premiums, $98; expenses, $22; balance in treasurer's hands, $105.84.

PEEL.

County Society.—One hundred and thirty-three members; subscriptions, $182; balance from 1858, $56.35; deposited by township branches. $562.50; grants from municipal councils, $180; government grants, $599. 96; receipt at show and ploughing match, $194.81; total receipts, $1775.62. Paid township branches, $872.48; paid in premiums, $478.50; copies *Agriculturist*, $25; expenses, &c., $171.11; balance in treasurer's hands, $228.53.

TOWNSHIP BRANCHES.

Albion.—Sixty-six members; subscription, $66; balance from 1858, $6.36; grant, $34.95; entries, $7; total, 114.31. Paid in premiums, $105; expenses, $13,85; balance due treasurer, $4.54.

Caledon.—Thirty-two members; amount of subscriptions, $54 50; government grant, $28.28; balance from previous year, $21; receipts at show, $10.50; total, $114.28, Paid in premiums, $90; expenses, $21.56; balance in hand, $2.72.

Chinguacousy.—Seventy-three members; amount of subscriptions. $87; government grant, $42.14; total received, $129.14. Paid in premiums, $98; paid balance due from 1858, $10; expenses, $16; balance in treasurer's hands, $4.86.

Gore of Toronto.—One hundred and thirty members; amount of subscriptions, $165; balance from previous year, $49.74; grant from township council, $28.50; government grant, $112.39; total, $355,63. Paid in premiums, $248; expenses, &c., $55,79; balance in hands of treasurer, $51.84.

Toronto—One hundred and eighty members; subscription, $236.25; balance from 1858, $81.12; entries, ploughing match, $7; grant from township council, $80; government grant, $112.22; total received,$516.59. Paid in premiums at shows and ploughing match, $322; expenses, &c., $77.62; balance in treasurer's hands, $116.97.

PERTH.

County Society.—One hundred and eighteen members; subscriptions, $224 50; balance from 1858, $166 38; deposited by Townships Branches, $273; received for premium wheat sold, $51 84; donation from Canada Company, $40; grant from Stratford Town Council, $60; Government grant, $599-96; total receipts, $1655 68. Paid Townships Branches, $745 05; paid in premiums, $410 38; expenses, &c., $245 58; balance in Treasurers's hands, $254 67.

TOWNSHIPS BRANCHES.

Blanshard.—Eighty seven members; amount of subscriptions, $147; received from County, $55; Government grant, $136 25; balance from previous year, $22 93; total received, $361 23. Paid in premiums, $219-25; expenses, $78 35; balance in Treasurer's hands, $63 63.

Fullarton, Logan and Hibbert.—Eighty members; amount of subscriptions, $122 75; Government grant, $138 67; County grant, $70 45; premium refunded, $30; sundries, $1 40; total received, $363 27. Paid balance due treasurer from previous year, $15 05; copies "Agriculturist," $12; paid premiums, $225 50; expenses, $117 25; balance due treasurer, $6 53.

Wallace and Elma.—Thirty one members; amount of subscriptions and government grant, $80 00; balance from previous year, $40 45; total, $120 45. Paid in premiums and expenses, $106 75; balance in treasurer's hands, $13.70.

PETERBOROUGH.

County Society.—One hundred and three members; subscriptions, $109; balance from former account, $99 06; received from sale of seeds, $128 90; deposited by Townships branches, $264; Government grant, $479 98; receipts at show, $34 40; total $1115 34. Paid for clover seed, $122 50; paid Townships branches, $589 98; premiums, $355; expenses, $42 78; balance in Treasurer's hands, $5 08.

TOWNSHIP BRANCHES.

Asphodel and Belmont.—Twenty-five members; subscriptions, $26; government grant,$27 13; received for seeds,$53; sundries, $9 75; total received, $115 88. Paid for seeds, $61; premiums, $39 88; expenses $8; balance in hand, $7 00.

Dummer and Douro.—Sixty members; subscriptions, $71; balance from previous year, $134 99; Government grant, $87 67; total received, $293 66. Paid for clover seed, $132; ploughing match, $15; expenses, $21 92; balance in Treasurer's hands, $124 74.

Otonabee.—Amount of subscriptions, $74 02; Government grant, $77 79; received for seeds sold, $17 61; receipts at show, $23 50; total $192 72. Paid Treasurer, balance due him from previous year, $56 16; copies "Agriculturist," $10; paid premiums, $89 87; expenses, &c., $34 40.

Extracts from Report.

In presenting their annual report on the state of agriculture, in the Township, the Directors beg leave to introduce a short history of its early settlement and progress:—

The first settlers arrived in the township about the year 1820. At that time it was an unbroken forest. The price charged by government for the land was £7 per hundred acres, but large tracts were granted to naval and military officers, who had been discharged from service a short time before, at the close of the Peninsular war. These located themselves along the front of the township on the north Shore of Rice Lake, attracted by the picturesque and beautiful scenery which there abounds. Had these men remained, the advantage to the settlement would have been very great, as most of them were in receipt of annual pensions from the British Government, and thus a large sum of money would have been brought into the township yearly; but the novelty of their position soon wore off. To men who had been accustomed to move in the aristocratic circles of Europe, and surrounded by the refinements of wealth and fashion, the isolated and laborious life of the Canadian pioneer became irksome and intolerable, and within five years from their first settlement, they had all abandoned their location and sought homes and occupations more congenial to their tastes and habits. And as at that time the regulations in regard to absentees were such that the township derived no benefit from their land, the progress of the township was very much retarded by large tracts being left unoccupied; as the actual settlers were compelled to open roads through the lands of the absentees, and by improving their own property were at the same time increasing in equal ratio the value of the property of those individuals who had deserted them in their greatest need. In consequence of the township being situated so far inland, and having Rice Lake in front of it, great difficulty was experienced by the settlers in conveying themselves and their necessary stores,to their places of destination. Most of these had to be transported on the shoulders of the hardy Pioneers, from the shores of Lake Ontario, a distance of from 25 to 30 miles. But little inducement offered for clearing land, as the cost of taking produce to market would have been equal to the price obtained for it, nor were there any mills within reach to grind that required for home consumption. In view of these facts, it will not be wondered at that many were discouraged, and left the township during the first 3 or 4 years, and that only the most dauntless and energetic should persevere in the face of what appeared almost insurmountable difficulties, until the most adverse circumstances yielded to their indefatigable industry and unwavering purpose; and until they had succeeded, after long years of toil and hardship, in converting the frowning wilderness into pleasant and comfortable homes for themselves and posterity.

The Township of Ontonobee contains about 70,000 acres, and it is computed that fully one half of this is cleared and under cultivation. Along the front, and for some distance back from the lake the land was principally timbered with pine, the soil varying from a light to a heavy clay loam, well adapted to wheat, and most of the cultivated cereals, and roots. Where heavy clay loam prevails, the land generally requires draining, further back and in the middle of the township the timber was chiefly hardwood, and the soil a calcareous clay mixed with small limestones, the surface rolling, in some places thickly covered with boulders of lime and granite, from 100lbs. to a ton or over in weight, and adapted to all cultivated crops. Along the northern boundry the land is more broken; narrow swamps and ridges alternately prevail; the land here is not so well adapted to wheat, in consequence of the mucky nature of the soil.

Cleared farms are worth from $20 to $40 per acre, according to improvements, actual sales have been made in diff rent parts of the township, at from $16 to $40 per acre; the fences are generally of rails and are equal to any in the country. Some farmers have lately commenced to build stone fences, which, as far as tried, have proved efficient.

The original log buildings have nearly given place to frame and stone dwellings, frame barns, stables, sheds, &c., &c., mostly of a very superior description.

The leading product is Fall Wheat; on land properly cultivated, sown at the right season, and otherwise well cared for, the yield is 25 bushels per acre or over, in some cases 41 bushels have been raised; although much of it is inferior, from being sown on land in poor condition, and improperly cultivated, yet probably one half of all the wheat grown in the township, will reach the figure indicated above.

Peas are sown to a considerable extent, and the product is 25 to 30 bushels per acre.

Oats are grown chiefly for local consumption and produce, and produce about 30 bush. per acre, with the very best cultivation, and in favorable seasons, as high as 80 bushels per acre have been obtained.

Spring wheat is not much grown, the proportion not being over 1 to 5 of fall wheat; the average yield is about 10 bushels per acre, the climate and soil being much better adapted to fall than spring wheat.

Formerly turnips were grown very successfully on new land, but for several years past very little land has been cleared, and farmers have had to resort to old land for that purpose. Root crops are now very generally though not extensively cultivated; the quantity of land devoted to roots, exclusive of potatos, does not probably exceed 1 per cent. of the cleared land of the township. Turnips produce from 400 to 800 bushels per acre, Mangel wurzel about the same. Potatos about 200 bushels per acre.

The prevailing system of cultivating and cropping is: wheat after summer fallow,—then oats, followed by peas, which is sometimes succeeded by wheat, then seeded to grass, which is mowed one or two years, then pastured one or two more, and again summer fallowed for wheat, and so on again. The current wages for farm laborers, during the past year, has been from $10 to $12 per month with board. Carpenters $1 25 to $1 50 per day. Masons $1 50 per day, all with board.

In 1858 it was computed that the wheat crop was injured to the extent of 30 per cent. by the weevil or midge; in 1859, the damage to fall wheat was hardly perceptable. The Fife wheat also almost escaped uninjured, while Club wheat suffered to the extent of 10 per cent; fall wheat suffered considerably in some places, by the severe frost of June 4th; in a few cases the damage was estimated at 50 per cent; but the greater portion of the township escaped without injury; the lands on which its effects were most severely felt, were mucky soils, and very light sandy loams.

The hay crop of 1859 was a complete failure, the principle cause of which is ascribed to above mentioned frost, although it is believed that the ravages of the Grasshoppers the previous fall had an injurious effect on the plants by stripping off the leaves, and leaving the roots more exposed than usual.

Potatos were a full crop, and not affected with rot except in a few cases. Turnips were above an average, in several cases 800 bushels were obtained; Mangel Wurzel and Carrots were also good, but the quantity raised is insignificant. Several small parcels of the Hungarian Grass seed were sown last spring; on very rich garden soil, the produce was computed at 4 tons per acre; in one case $\frac{2}{3}$ of an acre was sown, in a piece of dry calcareous soil, of an average quality, without manure, with the view of testing its value for general culture, as a forage crop; the quantity of seed sown was 15lbs, time of sowing 1st of June, and the yield $1\frac{3}{4}$ tons per acre.

The season of 1859 has been regarded as very peculiar. Notwithstanding plowing commenced at least two weeks earlier than usual, yet vegetation was exceedingly late, and was again checked very early in Autumn; thus while the growing season has been shorter than usual, the working season has been much longer, the average plowing season may be regarded as commencing April 1st and continuing until Nov, 15th, or about $7\frac{1}{2}$ months, while the past season, plowing commenced on the 18th of March, and continued until the 2nd of December, or about $8\frac{1}{2}$ months.

But little care has been taken in improving the breed of cattle; a few importations have been made of the Durham and Devon breeds; the latter have not proved successful, as a cross with the natives. The Durhams have proved

superior to any other for feeding, and it is believed that a cross of the Durham and the natives is best adapted to general purposes.

Horses are a mixture of breeds which it is hardly possible to define, and require to be improved in size, being in general much too small for heavy plowing.

Several importations of Leicester sheep have been made, which are now diffused throughout the greater portion of the township; most of the flocks having been partially crossed with them.

The breed of Pigs is very good, having been first crossed with the Berkshires, and more lately improved by the introduction of a large white breed, said to be imported from England.

Until very recently cattle-breeding was confined to the wants of the locality, but for the last four years a considerable number have been bought up by drovers from the United States, the price of 4 year old steers being about twenty dollars. About 500 head of cattle, 500 sheep, and 1000 pigs, have been taken out of the township during the past summer, in this way, In the winter of 1858 and 1859, Thomas Short, Esq. fed 150 head of cattle for the Montreal and New-York markets; and he and others are again engaged in the same business the present season. The result of Mr. Short's operations last year, chiefly in consequence of the scarcity and high price of feed towards the end of the season, was unsatisfactory; but it may be stated that his cattle were fed wholly on hay and grain, while, the present year, straw has been substituted for hay, and roots in some measure for grain; and experience thus far seems to indicate that this course is equally efficacious, as it is evidently much less expensive; although the system of stall-feeding is evidently attended with more trouble and risk, and may not yield so large a direct profit as selling in a lean state, yet by the large quantity of manure it produces, it must rapidly improve the soil and ultimately result in the greatest profit.

Thorough drainage cannot be said to have yet been commenced, although quite a number have partially drained, some extensively, and the result has been very satisfactory.

It has already been remarked that roots are not extensively cultivated; but the quantity is increasing every year. One farmer had a field of fourteen acres last season, which was the largest quantity yet raised in the township.

The subsoil plow was introduced several years since, but the expectations regarding it were not realized. The past year two farmers have used the Michigan double mouldboard plow, of which better resnlts are anticipated.

A great improvement has taken place in agricultural implements, most of which are now manufactured in the township, at an extensive establishment erected by Thomas Short, Esq., M. P P., and leased to John Moscripp, by whom it is well worked. The machines and implements made are of the best description. Pitt's 8 horse power thrashers are generally used. Plows are of almost every description. There are a few reaping and mowing machines, but most of the land requires improvement in the removal of stones and stumps before they can be generally and efficiently worked.

The greatest improvement required in farm management is, deeper plowing and some means of increasing the quantity of manure. Although it is not admitted that the township is inferior to others in general farm management, yet it is beyound a doubt that with thorough and deep tillage, the produce of the land might be increased 100 per cent.

SMITH.—One hundred and eight members; subscriptions, $108; balance from previous year, $5.81; government grant, $133,36; total, 247.17. Paid in premiums, $52; paid for clover seed, $65; paid for plaster, $70; expenses, $60.17.

PRESCOTT.

COUNTY SOCIETY.—Fifty members; am't of subacriptions, $50; balance from previous year, $9.60; deposited by township branches, $160; government grant, $374.40; total, $594. Paid for copies of *Agricu'turist*, $13. 25; paid township branches, $384.64; premiums, $163; expenses, $32,90; balance in hand, 21 cents.

TOWNSHIP BRANCHES.

CALEDONIA.—Forty members; amount of subscriptions, $40; balance from previous year, $2.50; government grant, $56.16; total, $98.66. Paid in premiums, $86; expenses, $12; balance, 66 cents.

HAWKESBURY.—Forty members; subscriptions, $152; government grunt, $112. 32; total, 264.32. Paid County Society, $36; paid premiums, $184.62; expenses, $36; balance in hand, $7.70.

LONGUEUIL.—Fifteen members; amount of subscriptions, $45; balance from former acc't, $8.45; government grant, $56.15; total, $109. 60. Paid in premiums, $84.65; expenses, $21; balance in treasurer's hands, $3.95.

PRINCE EDWARD.

COUNTY SOCIETY.—Ninety-four members; subscriptions, $94; received proceeds of a note discounted, $93.40; deposited by township Societies, $239; government grant, $570; receipts at show, $40.26; total received, $1041.66. Paid balance due treasurer from previous year, $57.09; paid note, $100; copies *Agriculturist*, $36.80; paid township branches, $580.80; premiums, $158.30; expenses, $20.60; balance in hand, $88.07.

TOWNSHIP BRANCHES.

AMELIASBURGH.—Forty members; subscriptions, $40; balance from previous year, $8.09; government grant, 56.28; total received, $104.37. Paid in premiums, $90.48; expenses, $7.83; balance in treasurer's hands, $6 06.

HALLOWEL.—Forty-two members; subscriptions, $42; balance from previous year, $6.68; government grant, $54.29; total, $102.79. Paid in prizes, $86.58; expenses, $12.75; balance, $3.64.

HILLIER.—Fifty-six members; subscriptions $56; government grant, $78.80; balance from previous year, $22.25; total received, $157 05. Paid in premiums, $115; expenses, $29.20; balance in treasurer's hands, $12.85.

MARYSBURGH.—Twenty-nine members; subscriptions, $63; government grant, $80.32; total, $143.32. Paid for clover and timothy seed, $138.60; incidental expenses, $4.72,

SOPHIASBURGH.—Forty-five members; amount of subscriptions, $48; balance from previous account, $35.72; government grant, $69.10; total received, $152,82. Paid in premiums, $131.40; expenses, $15; balance in treasurer's hands, $6.42.

Miscellaneous.

JAVA WHEAT.—"*Despise not the Day of small things.*—The introduction of this variety of wheat has added so much to the agricultural wealth of New England, that its history is worthy of record. Until within a few years the cultivation of spring wheat was scarcely practised in this vicinity. The weevil, rust, and other enemies of the wheat crop, were considered so sure and destructive, that few farmers could afford the experiment. So generally did this idea prevail that the State offered a bounty on the crop, in order to induce farmers to attempt the culture. By the returns made to the authorities in this town, I find that the largest crop raised on the choicest fields, was less than twenty bushels, while the average was but about fifteen—not enough, even with the state bounty, to encourage farmers to sow wheat largely. About twelve years since, a young lady while burning some Java coffee, found among it a grain of wheat. Struck with its fine plump appearance, she planted it in the garden. It came up and grew vigorously, maturing some half dozen heads, all well filled, with no appearance of weevil or rust. The product was sown in the garden the next season with the same favourable result. The third year, a portion was distributed among some friends, sown upon different soils, but in every instance yielded abundantly. From this small beginning, the "Java" rose rapidly in value and in the estimation of the community, until it has become a general crop with us, being considered not only more profitable than any of the grain crops, but more sure than even the corn crop. The yield the past year varied from 25 to 42 (or more) bushels per acre—worth for flouring purposes $1 50 per bushel, and a trifle more for seed. I have not heard of a failure with this variety within the two past years. For flouring it is said not to quite equal some of the winter varieties, nor the Scotch Fife. The services of the lady who was the means of its introduction, have not been acknowledged or rewarded by individuals or associations; but I think entitle her to at least a vote of thanks, and could she have one cent on every bushel of Java wheat raised in New England the past year, it would not be an undeserved though abundant reward.—*C. W. G., Holden, Mass., in Coun. Gent.*

GREAT DESTRUCTION OF RUSSIAN GRAIN BY LOCUSTS.—The following is from the circular of Messrs. Carr, Rostock:—The total shipments of wheat from Russia up to the end of September were 684,871 quarters, against 508,105 quarters in 1859. Taking into account the sad havoc done by the locusts in the whole of Southern Russia, Russian and Austrian Poland—the devastation being so enormous that in the Odessa districts alone some 400,000 or 500,000 quarters of wheat were destroyed—and considering that from the St. Petersburg, Riga, and Archangel districts, and from Poland the yield is not great, but the reverse, I think I may estimate Russia and Russian Poland's capabilities or exports for the next campaign at one million quarters.—Having so often been written to and asked to give an idea of the devastation committed by the locusts, it may not be out of place, once for all, now to do so. In the distance a swarm of locusts look like a dark thunder-cloud, and as they

approach a whistling sound is heard in the air, similar to a violent thunder-storm; the sun, if shining at the time, is darkened, and the temperature becomes 5 or 10 deg. Reaumer cooler, as the warmth of the sun is prevented from penetrating the mass. The swarm takes from twelve to fifteen hours to pass over, and the enormous mass or quantity of this fearful scourge in the atmosphere, as far as the eye can reach, makes such an overpowering impression on the human frame that a person feels an inward depressing feeling, such as difficult breathing, and inability to shake off the horror-stricken nervous sensation. Business is suspended. If these plagues have once reached the ground, the earth is for several miles in extent a foot deep at least with them, and they do not ascend until they have eaten every particle of grain, pulse, grass, &c., and the soil then looks as if it had been laid waste by fire. These insects can only be got rid of when they are not tired and are able to fly away, when a great noise is made, and several thousands of persons set to work together; indeed, it often happens that the Government sends two or three regiments of soldiers to assist the farmers; if, however, the swarms are tired and so enormous that they cover the fields a foot deep or more, then it is not in the power of human beings to prevent their committing sad havoc, and when killed and left on the ground, or should a swarm be driven into the sea and afterwards washed ashore, the stench is past bearing, and generally is followed by a pestilent disease. According to a map drawn whilst the Governor-General of Odessa made a tour of inspection early last May, about 75 Russian square miles were covered with the eggs of these insects. In the fields surrounding the small Polish town of Tomaszow, no less than 625 baskets of living locusts (each basket containing about 6,400, and 554 gornats of 15,600 eggs each, making in all about four million locusts and nine million eggs) were delivered to the burgomaster of the place.

Business Qualities of the Farmer.—The thoughtful farmer may find a hint of value in the following, from Chas. Betts, in the *Ohio Farmer*.

"If the farmer needs any two qualities more than others, as business qualities, it is *forecast* and *force*—qualities which will enable him to look forward into the coming years, and lay his plans, and then with a vigor which will over-ride all obstacles, push them into execution. In any business where investments are made to-day and returns reaped to-morrow, reliance is chiefly based on ready capital, and the circumstances of the hour. But the case with the farmer is different. He must exercise forethought; his calculations must run through the year, and on through a series of years; and, to be successful, he has many collateral influences to weigh, and in extensive operations a complication of influences which require for their proper adjustment and direction, the highest skill, judgment and forethought. His success, like one of those mysterious and almost stranger planets, takes ever a varying course, and is sometimes lost to view. But if he is a true Le Verrier, he will count, and weigh, and demonstrate the bearing of all controlling causes, and, with master ability, usher in the grand result."

Shade Trees in Pasture.—Upon the first subject you mention, viz: "should shade trees be allowed in pasture fields?" there may be, perhaps two opinions, but the one most generally held is against shade, unless it is in the immediate vicinity of water.

The most important object to be attained in grazing, next to good and plentiful grass, is that the cattle shall be free from any disturbance whatever, and that they shall take as little exercise as possible. In the first place, then, if the shade trees are at any distance from the water, the cattle will collect under them, and in hot weather will often stand there until their drinking time arrives, and then run in a body to the water, where they will push and fight for the first drink, and then run back again to the shade. I have seen them do this often. Then again, one of the greatest enemies to fat cattle is the biting-fly, which loves the shade as well as the cattle, and when the latter are huddled together under the shade, they suffer a great deal more annoyance and worrying than they do in the open field. I have seen bullocks smart enough to leave the shade and stand in the sun all day, and they seemed to thrive better by it. If, however, a man has a stream running through his field, where the cattle can stand over their knees in water, let him by all means have abundant shade on the banks. His cattle can then stand, their legs protected, and whisk the water over their backs with their tails, and bid defiance to the flies.—*R. W. Downman in American Farmer.*

Apples for Stock.—All kinds of stock relish apples during the winter months, almost as much as do children. They will eat them with avidity, and in preference to any grain or roots fed them at the same time. An experiment of feeding stock with, say, half a peck to a horse or cow daily, will soon satisfy any person that they conduce both to the health and spirit of the animal.—*Ohio Farmer.*

Salt, or Lime and Salt, to Prevent Grain Crops from Lodging.—In looking over our foreign exchanges we not unfrequently meet with passages like the following, from which we infer that the power of salt to strengthen the straw of grain crops, even when the growth has been rendered very luxuriant by guano or other nitrogenous manures, has been often tested, and is now *well established:* "When the crop is liable to lodge from a weakness in the straw, three cwt. of salt should be mixed with the

guano. Lime and salt will prove equally beneficial, but this dressing is more expensive, while the lime and salt require to be mixed for some weeks previous ro application to the land."

Excessive Cleanliness.—Even cleanliness can be exaggerated, as in the case of the Pharisees, and the late Duke of Queensberry, who would wash in nothing but milk. Our own Queen uses distilled water only for her toilet; but this is not a case in point, since it is for the sake of health, I believe, with her. A sad case however, was that of the lovely princess Alexandrina of Bavaria, who died mad from over-cleanliness. It began by extreme scrupulousness. At dinner hour she would minutely examine her plate, and if she saw the slightest speck on it she would send for another. She would then turn the napkin round and round to examine every corner, and often rise from the table, because she thought she was not served properly in this respect. At last it became a monomania, till on plates, napkins, dishes, table-cloth, and everything else, she believed she saw nothing but dirt. It weighed on her mind, poor thing; she could not be clean enough, and it drove her to insanity.—*English Hand Book of Etiquette.*

Glaciers.—Among the most remarkable objects on the surface of our earth are the great rivers of ice that are forever slowly creeping down the valleys of the Alps. The globe on which we live is sweeping through a region of intense cold, the warmth which is essential to animal life extending at farthest but a few miles from its surface. The rays of the sun, which produce the heats of summer, pour through the cold space above without leaving in it any traces of their power, The water which is evaporated from the ocean and rivers, as it floats upward into the cold regions, is there condensed, and, falling upon the summits of the mountains, covers them with deep layers of perpetual snow. As the snow accumulates in vast masses in the valleys which furrow the steep sides of the mountains, it is pressed downward by its own weight along the valley, and when it reaches the boundary of perpetual frost, it is converted into clear solid ice. From what we know of the properties of ice we should suppose that a mass of it hundreds of feet in thickness, wedged in between the rocky and ragged sides of a crooked valley, would remain immoveably fixed in its position; but careful and repeated experiments show that this is not the case. Professor Forbes in Edinburgh, by placing rows of stakes across a glacier and observing them carefully with a [illegible]dolite, ascertained that the whole mass was moving slowly and steadily downward, at the rate of a few inches only in 24 hours.

Within a few years glaciers have been thoroughly investigated by Agassiz, Forbes, Tyndall and many others, and hundreds of observations of their motions and phenomena have been made with suitable instruments. It is found that the motion is more rapid in the middle than at the sides, at the surface than at the bottom, in the summer than in the winter—and like rivers of water, glaciers move the most rapidly in the steepest part of their course, the motion becoming very slow indeed where the ice spreads out to fill a broad part of the valley. When the earth falls down from the sides of the valley upon the edges of the glacier, it rests there, forming long lines or walls, which are called *moraines.* When two streams of ice unite, the moraines upon the contiguous edges come into the middle of the combined stream, and thus the glacier in the lower part of its course becomes marked with rows of earthy matter and broken rocks extending lengthwise along its surface. When separate masses of rock roll down from the sides of the valley and rest upon the ice, they protect the ice directly beneath them from the action of the sun's rays, and as the surface around is melted away, these rocks remain lifted up in short pillars, presenting a very singular appearance. Isolated masses of gravel also protect the ice from melting, and when that around melts away, the mass falls into a conical form, and thus the glacier becomes dotted with cones of gravel the hearts of which are of ice.

As the glacier moves down the mountain into the warm regions, it is melted on the surface, and thus its vertical depth diminishes at its lower portion, though it generally terminates abruptly with an end of considerable thickness, a stream of water usually flowing out of a deep cave in the end. In summer this end melts more rapidly than the glacier moves down, and the terminus retreats up the valley; but in winter the head of the frozen monster is pushed downward along the valley, plowing up the ground, tearing trees from the earth, and sometimes crushing in the walls of houses.

The Himilayas and other mountains which rise into the regions of perpetual frost produce glaciers, as well as the Alps. Near the pole, the glaciers are sometimes pushed quite into the sea, when their ends break off and float away, forming the icebergs, which are occasionally encountered on the voyage from this country to Europe.—*Scientific American.*

Editorial Notices &c.

A few more Subscribers wanted.

We have much pleasure in being able to state that t *Agriculturist* has attained a considerably larger circulation this year than ever before

since its establishment. Having commenced the year however with a largely increased edition, we have still about a thousand copies on hand from the commencement of the year, and are consequently able to fill orders to that amount for he whole voluume. If as many of our correspondents as possible will favour us with a few more orders, they will enable us to distribute these back numbers in their various localities, where of course they will be of more service than in our office. We regret that owing to a pressure of occupation we are not able yet to announce the list of subscriptions up to 1st April. We hope to be able to do so by next number.

FRESH CLOVER SEED FOR SALE.

250 BUSHELS OF GOOD CLEAN SEED, Canadian growth.

Price on application and samples sent by mail or otherwise. The seed is put up in two bushel bags of the best quality, and can be forwarded with safety to any part of the country.

Descriptive catalogues of seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman, 350 Yonge Street.

Toronto, April 22, 1861.

SHORT HORNS.

FOR SALE—FIVE BULLS, all entered in American Herd Book. Prices, from 100 to 400 dollars Also, a few HEIFERS, at low prices. Apply to

T. L. HARISON, *Morley*,
St. Lawrence County, New-York,
or at the *Agriculturist* office, Toronto.

March 9, 1861. 6t.

FOR SALE.

A FEW pure bred Devon Bulls, Cows, Heifers, Calves, &c., of unquestionable pedigree.

GEO. Z. RYKERT,
St. Catharines, C. W.

April 10th, 1861. 3-t.

FRESH GARDEN, FIELD and FLOWER Seeds for Spring Sowing.

The Subscriber begs to inform his friends and the public that his stock of Fresh Seeds is now complete, and very extensive, embracing almost

EVERY VARIETY OF SEED

that is adapted to the country. The stock of Agricultural Seeds is large and well selected, and the vitality of each sort being fully tested, the genuineness of the seeds may be fully relied upon.

Merchants and Agriculturial Societies ordering Seeds in bulk will be supplied at wholesale prices. Complete assortments of garden seeds neatly put up in small papers, with directions for sowing, and sold by the box containing 150 papers for $5. Twenty packages of Flower Seeds, choice sorts, will be sent free by post to any part of the Province, to the address of any party remitting $1, free of postage, or 25 packages, postage unpaid.

The Subscriber wishing to give parties who reside at a distance an opportunity to test the qualities of his seeds, will on the receipt of $2, free of postage, send free to any Post Office in Canada, 25 full sized packages of VEGETABLE SEEDS, many of them containing an ounce of seed, and 12 papers of choice FLOWER SEEDS with descriptive catalogue and box included—the seeds to be of my own selection. None but the most useful and desirable varieties will be sent.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.

Toronto, April 22, 1861. 9—3t.

SEEDS! SEEDS! SEEDS!

200 BUSHELS WHITE POLAND OATS; weighs 42 lbs. to the bushel.

100 bushels Hungarian Grass.

100 bushels imported Swede Turnip Seed.

200 bushels of Early and Late Potatoes, fine sorts for seed, with a full and general stock of all kinds of Seed for the Farm and Garden.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.

Toronto, April 20, 1861.

GARNET CHILI POTATO.

THE Subscriber has on hand upwards of a hundred bushels of this new and superior variety of potato to sell for seed.

ALEX. SHAW,
Oak Hill, Toronto.

April 15th, 1861.

SEEDS! SEEDS! SEEDS!

TORONTO SEED STORE,

CORNER OF FRONT STREET AND WEST MARKET SQUARE.

THE Subscriber would beg to direct the attention of his friends, and the Public to his assortment of

FIELD, GARDEN, AND FLOWER SEEDS,

Comprising large quantities of *Turnips*, *Carrots*, *Mangel-wurzel*, *Cabbage*, *Onion*, *Parsnip*, and everything worthy of cultivation in this latitude. They are all of the best quality and procured from such sources as to warrant their genuineness.

THE SIXTH ANNUAL EDITION OF HIS PRICED CATALOGUE

Of seeds, contains full directions for the treatment of various Seeds and Crops, together with much valuable information regarding this subject, and *may be had gratis on application.*

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HUGH C. THOMSON,
Secretary.

Toronto, 1861.

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OR

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OF UPPER CANADA.

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Marl as a Manure.

In most parts of Canada, marl is to be found, varying considerably in its composition, and consequently in its manuring power. Shell marl is often exceedingly rich both in the phosphate and carbonate of lime, and constitutes a mine of wealth to the farmer where it is found in sufficient quantity, especially for soils that have been exhausted from over-cropping. On light soils, ordinary marl, consisting of a large proportion of clay, and but a moderate amount of lime, will be found beneficial. As our soils have their standard of productiveness gradually lowered by increased cropping, marl will be found in many places a valuable acquisition, and will improve the land to which it is applied, through a long rotation of crops, both mechanically and chemically.

Marls are well suited as a top-dressing to grass-lands, as the substance crumbles by exposure, and the particles become minutely divided. The most profitable application, observes the *Mark Lane Express*, consists in laying it on grass leys in the end of autumn, or beginning of winter, when the herbage will be of little value, and when the changes of weather will accomplish the decomposition of the marl by the time the grass shoots in the spring. It will thus secure an even spreading over the surface; and the bush harrow, and the roller being afterwards employed, the particles will be well reduced, and pressed into the soil. The crop of grass is greatly improved; and the land is ploughed for a grain crop in the following years. The marl will be thoroughly matted in the turf, and the vegetable sward which it has raised will most materially promote, by its decomposition, the subsequent fertility of the land. This mode affords time for the crumbling of the marl, and it raises a close vegetable growth, on the decay of which the future crops of grass or grain depend for nutriment. The substance that is used for top-dressing cannot be incorporated with the soil from want of arable culture, and consequently the effects depend on the influence which it is able to exert on the materials with which it comes into contact. By raising a large quantity of grassy herbage in the shape of roots, leaves and culms, it affords, by the decomposition of these substances, when the land is ploughed, a vegetable "pabulum" to the growing crop, to which no manure yet known is superior, if any be equal to it, either in power or durability. Consequently all top-dressing of an earthy nature should be used with the view of producing this growth for the benefit of future crops. The quantity of marls used in this way on grass lands may be stated at an average of forty to sixty two-horse cart loads per acre.

The use of marls on fallows for barley and turnips in the spring, admits of the better mixing with the soil, provided the suitable reduction of the marl be accomplished; which may be done by exposure, if the weather be favourable, before the last ploughing of the land, and when

the nature of the marl favors the distribution. The weather is the best operator in producing disintegration, and the time of exposure may produce some useful reciprocal actions. In whatever manner marls are applied, it is absolutely necessary that the substance be reduced as fine as possible, by breaking the lumps, spreading it evenly by harrowing and rolling when dried after rains, and by being ploughed into the ground by means of a shallow furrow. Some marls will crumble to powder, immediately on exposure, or very soon after; others require the changes both of summer and winter, and also much attention in improving on the action of the weather, by breaking, harrowing and rolling.

The effects of marl have been much the greatest on dry, sandy grounds, that have been converted from a comparative waste, into arable cultivation, and on light loams. On raw, damp loams, reports have been unfavorable. The marl attracts moisture, and thus increases the poachy looseness of the land. Clays are sometimes much improved by the application of marl, but the soil should be dried, and the clay well pulverized, in order to facilitate the incorporation with the sandy substance. Practice directs the use of clayey marls on all light lands, and the application of sandy and shelly marls to heavier soils; but all these substances have been found useful on any soil, when judiciously applied.

Marls are often made into composts with earth and farm-yard dung, either in layers, or in heaps, or in the bottoms of the cattle yards, where it will be soaked with the urinary fæces, and afterwards mixed with the heap. It is thought that such a preparation is more effectual than marl by itself. Frequency of marling may produce a hurtful looseness in the land, which is very easily removed, by pasturing the land in rest for a number of years. The avaricious use of the plough has produced the trivial, hurtful effects that have sometimes been observed from the use of marls.

Effects of Soaking Seeds in Chemical Solutions.

The steeping of seeds previous to sowing them is a practice of great antiquity, and has been extensively adopted. A strong solution of salt has often been employed in preparing seed wheat; also various chemical preparations—some of them possessing very energetic and even poisonous qualities. The soaking of Indian corn in pure water and drying it with plaster is a practice very generally followed, and the experience of practical men has pronounced it beneficial. Such seeds as are enveloped in a hard husk, as mangel wurzel for instance, are beneficially treated by steeping, which not only facilitates the important process of germination, but is likewise found to impart strength and constitution to the germ and young plant, according to the chemical constituents composing the solution.

The following results of carefully conducted experiments on this subject we abridge from the Transactions of the Highland and Agricultural Society:

Various kinds of seeds were steeped in sulphate, nitrate, and muriate of ammonia, in nitrate of soda and potash, and in combinations of them; and in all cases, the results were highly favourable. For example, seeds of wheat steeped in sulphate of ammonia on the 5th of July, had, by the 10th of August, tillered nine, ten, and eleven stems of nearly equal vigour; while seeds of the same sample, unsoaked, and sown at the same time, in the same soil, had not tillered into more than two, three, or four stems. The mixtures were prepared from the above specified salts, exactly neutralized, and then were added from eight to twelve measures of water. The time of steeping varied from fifty to ninety-four hours, at a temperature of 60° Fahrenheit. Barley was found not to succeed so well if steeped beyond sixty hours. Rye grass and other graniferous seeds do with steeping from sixteen to twenty hours, and clovers from eight to ten, but no more; for being bilobate, they are apt to swell too much and burst. A very superior specimen of tall oats, averaging 160 grains on each stem, and eight available stems for each seed, was prepared from sulphate of ammonia; they had an average of thirty four grains in the ear. The other specimens of oats, which were next the most prolific, were from muriate of ammonia; and the promiscuous specimens of oats were from the nitrate of soda and potash,—strong, numerous in stems, (some not having less than fifty-two,) but were not so tall as either those from the sulphate or muriate of ammonia.

Early and Late Sowing.

Great difference of opinion exists among practical farmers as to the effects of early or late sowing. Results have been from time to time given, which, not being comparative, are really of no value,—except, perhaps, in their own immediate district,—as they do not admit of general application; and probably, in some cases, indeed, the results were attributed to other causes than the time of sowing. In this part of the world, at least, accurate experiments and carefully recorded observations are very much wanted in reference to this question. A series of comparable trials on different soils in various sections of the country would materially assist the settlement of this disputed point.

Professor Wilson, in his treatise entitled, *Our Farm Crops*, observes:—The only experiments recorded are by Arthur Young, towards the close of last century, and these are yet quoted by several of the continental writers. These experiments had reference to the comparative yield of barley, sown at different periods in England, in the same soil, and in the same proportions, and the result is given as follows:—

Sown in	February,	the yield as	12	5
"	March,	"	11	5
"	April,	"	8	5
"	May,	"	6	5
"	June,	"	3	15

The preceding figures, furnished to us by such an authority on all farming matters as Arthur Young, surely are worth something. The experiment, no doubt, was a solitary one; but then it was strict, consequently valuable; and at all events, it is quite within our power to test their correctness in regard to the general conditions of barley growing, by a more extended series of trials, which would have the advantage of drawing public attention to the subject, and give us reliable data for our guidance in future operations. Perhaps some of our readers will favour us with the results of their practice as far as their experience or observation has extended.

Agriculture—Its Past, Present and Future.

Continued from page 2.98

EVENTS HAVING A PROGRESSIVE INFLUENCE ON BRITISH AGRICULTURE.

Societies for the Promotion of Agriculture. The Highland Society and the Smithfield Club (1784); the Royal Agricultural Society of Eng- (1838); the Royal Agricultural Society of Ireland (1841); the London Central Farmers' Club, the first farmers' club, the gradual establishment of local farmers' clubs and county agricultural societies (1843); the Board of agriculture (incorporated) was established by Sir John Sinclair, and had Arthur Young for its secretary (1793); Annals of Agriculture commenced (1784) by Arthur Young, and continned until 1808; the two great agricultural fetes of this period (1784) —the sheep shearings at Holkham and Woburn, at which hundreds of the most eminent of the kingdom were annually assembled—was also serviceable in stimulating the national taste in favour of agriculture.

New Plants previously Unknown in Britian. —Hops from the Netherlands (1524); potatoes introduced into England by Sir Walter Raleigh (1700), a government premium given as an encouragement to their cultivation—first in Scotland in 1739, and became general there in 1760 to 1780; white turnips (Norfolk whites) used by Lord Townshend (1730); swedes grown in East Lothian (1781); garden turnips were known in the reign of Henry VIII.; broad clover known in Scotland (1740); Italian rye-grass Scotland (1700 to 1732); clover hybridum, W. Stephens (1834); clover incarnatum, Ellman (1821); clover pratense (1645); clover perennium (1707); clover repens: in Scotland, where heath is removed and *lime* is applied, it springs up spontaneously (1707); mangel wurzel (1810) introduction due to Dr. Lettsom, most important as a root for heavy clays. Sainfoin and lucern followed the introduction of clover.

Artificial Manures.—Bones used by Mr. Watson of Keillor (1821); Mr. Stevenson of the *North British Agriculturist*, says that they were known to be agriculturally useful at the end of the last century; superphosphate of lime (1841); rape dust known in Scotland as a valuable manure (1820 to 1828); guano: half cwt. brought from Liverpool to Scotland, and sold at 6d. per lb. (1829); three cwt. brought (1831); guano first used in quantity (1841-42): some idea may be formed of the quantity now used, when it is stated in the *Times* of this day (2nd Feb. 1861), that Messrs. Gibbs & Co. paid last year at Liverpool £7,000, being at the rate of only 3d. per ton, with the addition of dock dues. Marl, used before the Roman invasion; woollen rags; blood and offal; ground coprolites; fish manure, starfish, sprats and mussels.

Artificial Foods.—Linseed, linseed cakes, rape-cakes, nut-cakes, cottonseed-cakes—I first used some about 1856-7—locust beans, Indian corn, rice, Dara lentils, Egyptian beans, dates, and a variety of other foreign productions.

Legislative Acts.—Free importation of foreign corn (1847); free importation of foreign animals (1841); the New Poor-Law (1834); the General Board ot Health (1848); Enclosure

Commission (1845); The Emigration Commission (1825); the Tithe Commutation Act (1836); the Copyhold Enfranchisement Act (1841; the Penny Post—Sir Rowland Hill (1840); the Land Drainage Company; the Lands Improvement Company; Government Drainage Loans: the first was passed in August, 1846, and a grant for England and Scotland for a period of 22 years, at 6½ per cent., was for £2,000,000, and for Ireland, £1,000,000. The demand for Scotland was very great, as much as £40,000 by a single proprietor; but early in the session of 1847 an act was past limiting the amount to any one poprietor to £10,000. In 1849 the whole money was applied for and granted, and an act passed for enabling companies or private parties to advance money. In 1850 another act was passed, making an additional grant for England and Scotland of £2,000,000, and for Ireland of £200,000, but limiting the sum to any one applicant to £5,000, including previous grants —a pretty clear proof of the anxiety for improvement by drainage. An act passed for obtaining outfalls in 1847.

Implemental Inventions.—The drill—Jethro Tull, the horse-hoe, ditto (1740); the thrashing machine and fixed beaters (1793); by Meikle (Scotland), in use sixty years at Clackmannan; the reaping machine (1827), by the Rev. Patrick Bell (Scotland), who is still living; the dibbling machine, by the Rev. J. Cooke (1788); the Americanized Bell's reapers, made by M'Cormick, and Hussey (1856); the first agricultural portable steam-engine invented and made by Davis of Birmingham, the grass-mowing machine introduced from America, pipe-making machines (Clayton and others), first draining tilery established (1841); Fowler's steam draining plough, Fowler's steam cultivating plough, Smith's (of Woolston) system of steam cultivation; winnowing machine introduced from Holland into Scotland, and publicly denounced from the pulpit (1710).

Literary Events.—The art of printing; Caslon's type manufacture; the printing and circulation of agricultural newspapers and magazines —Roffee's Farmers' Journal (about 1790); the first English work on agriculture (1534) entitled "The Boke of Husbandrie," 100 pages, by Sir Anthony Fitzherbert, Chief Justice of the Common Pleas in the time of Henry VIII.; the second was by Thomas Tusser, an Essex man, born 1527, who farmed at Rivenhall, about six miles from Tiptree; Jethro Tull—Arthur Young, also an Essex man (1740); the "Annals of Agriculture, commenced by Arthur Young (1784), and continued until 1808; the Journals of the Highland Society and of the Royal Agricultural Society of England; the works of Morton, Stephens, Low, Loudon, Huxtable, Smith, Hewitt, Davis, Caird, Rham, and Pusey.

General Events.—Turnpike Roads, canals; railroads Manchester and Liverpool (1830); the spinning jenny, the mule, the power loom; the steam-engine as applied to manufactures, mining, and river and ocean navigation; the electric telegraph (1837); steam navigation first boat built on the Clyde (1801).

Fluctuation in the Imperial Average Price of Wheat, annually from 1641 *to* 1860.

Year	Price per qr.	Year	Price per qr.	Year	Price per qr.	Year	Price per qr.
	s.		*s.*		*s.*		*s.*
1641	57	1696	63	1751	34	1806	79
1642	60	1697	54	1752	37	1807	76
1643	60	1698	61	1753	40	1808	82
1644	61	1699	57	1754	31	1809	98
1645	51	1700	36	1755	30	1800	107
1646	43	1701	34	1756	40	1811	95
1647	66	1702	26	1757	54	1812	127
1648	76	1703	32	1758	44	1813	110
1649	71	1704	42	1759	35	1814	75
1650	68	1705	27	1760	33	1815	66
1651	65	1706	23	1761	27	1816	79
1652	44	1707	25	1762	35	1817	97
1653	31	1708	37	1763	36	1818	86
1654	23	1709	60	1764	42	1819	75
1655	30	1710	69	1765	48	1810	68
1656	38	1711	48	1766	43	1821	56
1657	42	1712	41	1767	48	1822	45
1658	58	1713	45	1768	54	1823	54
1659	59	1714	44	1769	41	1824	64
1660	50	1715	38	1770	44	1825	69
1661	62	1716	42	1771	47	1826	59
1662	66	1717	40	1772	51	1827	59
1663	51	1718	34	1773	51	1828	61
1664	36	1719	31	1774	53	1829	66
1665	44	1720	33	1775	49	1820	64
1666	32	1721	33	1776	38	1831	67
1667	32	1722	32	1777	46	1832	59
1668	36	1723	31	1778	42	1833	53
1669	40	1724	33	1779	34	1834	46
1670	37	1725	43	1780	36	1835	40
1671	38	1726	41	1781	45	1836	49
1672	37	1727	38	1782	48	1837	56
1673	42	1728	48	1783	53	1838	75
1674	61	1729	42	1784	49	1839	71
1675	58	1730	32	1785	52	½830	67
1676	34	1731	29	1786	39	1841	65
1677	38	1732	24	1787	41	1842	58
1678	53	1733	25	1788	45	1843	50
1679	54	1734	31	1789	51	1844	51
1580	40	1735	38	1790	55	1845	51
1681	41	1736	36	1791	49	1846	55
1682	39	1737	34	1792	43	1847	70
1683	36	1738	31	1793	49	1848	51
1684	39	1739	34	1794	52	1849	45
1685	41	1740	45	1795	75	1840	41
1685	30	1741	42	1796	79	1851	39
1687	23	1742	30	1797	54	1852	41
1688	41	1743	22	1798	52	1853	53
1689	27	1744	22	1799	69	1854	73
1690	31	1745	25	1800	114	185ç	75
1691	30	1746	35	1801	120	1855	69
1692	41	1747	31	1802	70	1857	57
1693	60	1748	33	1803	59	1858	44
1694	57	1749	33	1804	62	1859	44
1695	47	1750	29	1805	90	1850	53

The Application of the Manure of the Farm.

By Professor Tanner.

The judicious employment of the manure of the farm can scarcely be looked upon as of less importance than its economical production; and when we consider the influence that this fertilizer has upon the produce, and consequently upon the profits, of the farm, we have a strong inducement to give the matter our careful attention.—For this purpose it will be advisable to treat the subject under two distinct heads, according as the animal excreta may or may not be intermixed with straw.

CLASS I.—ANIMAL MANURES, INTERMIXED WITH STRAW.

This includes the most expensive manures which are produced upon our farms. We have in that heterogeneous mass so familiarly known as farm-yard manure the great representative of this class. The evidence of practice is agreed respecting its real value, and the improvements which have been introduced into agricultural practice have a powerful and direct tendency to increase the quantity and improve the quality of this product of the farm. Our attention has now to be directed to a subsequent stage—its application to the land.

If we appeal to practice alone for an answer to the question before us, viz., What is the best period of the rotation and the best time of the year for applying the manure of the farm? it will at first sight appear almost impossible to elicit such a reply as will enable us to establish any definite rules, in consequence of the widely varying customs of different districts.—But this want of agreement need not cause us much surprise; for it is clear that as the conditions of soil and climate vary they must be met by corresponding modification in our practice.—I do not know any branch of farm management in which the truth of this principle is more evident than in the use of dung. There is scarcely any crop for which farm-yard manure has not been used with advantage; and throughout every month of the year we have instances of its successfel application. In explaining and justifying this diversity of usage, we must take the result of succesful practice as our primary guide; for science can rarely do more than explain the causes of a success already achieved, and cannot be recognized as an independent authority.—Acting upon this principle, we will first notice—

THE PRACTICE OF APPLYING DUNG TO OUR HEAVY SOILS, SUCH AS CLAYS AND CLAY LOAMS.

Fallows.—On clay soils the manure is commonly applied to the fallows, and my own experience leads me to consider this to be a judicious practice. If, in some cases, lime is used as a substitute for dung, this will arise rather from the difficulties of providing an adequate supply of the latter than from choice. The combined, or rather consecutive, use of the two substances will generally be found highly beneficial. The time for applying the dung will depend upon the condition of the land, as well as upon the other and more urgent demands both on the supply of manure and the horse-power of the farm. After the cultivation of the wheat and bean crop has been attended to, the fallow land and that under preparation for roots will demand attention; so that however desirable the autumn application of manure to the summer fallows may be in an abstract point of view, practically these fields will rarely be clean enough to warrant this proceeding, even if manure can be spared for the purpose. It is clearly impolitic to lay on dung in the autumn or early winter, unless we have been able to conquer the weeds, which, if undisturbed, would gain strength and ascendancy from this supply of nutriment. Moreover, except in those few instances in which stall-feeding during the summer is carried out, the autumn stock of manure will be the product of the previous spring, and consequently become thoroughly rotten, and for this reason be less valuable for the fallow ground than for a crop. The condition of the dung has an intimate connection with its application, and the question may fairly be asked, Whether the condition must not regulate the time of its application? To which we, however, reply that this condition is under our control, and may be made to accomodate itself to the general economy of the farm.

Throughout the management of a fallow two objects have to be kept in view:—1st, The improvement of the texture of the soil, so as to fit it for the growth and extention of the crop; and 2ndly, The liberation and development of fertilizing matter for the nourishment of the plant. The strong soils upon which alone fallows have been found desirable are so close and retentive in their chaarcter that there is some difficulty in preserving a free passage for roots. This importadt mechanical condition of the soil is attained by various tillage operations, which we denominate fallowing, as well as by the use of manure. It will be evident, upon a moment's consideration, that the less decayed the dung may be, the greater will be its firmness and rigidity, and consequently the mechanical influence which it is capable of exerting upon the soil will be in the same proportion. Thus, when fresh dung is ploughed into a strong clay soil, it offers a certain amount of resistance to its particles, again returning to their former close and adhesive condition; whereas, if thoroughly rotten manure were used, it could offer no resistance, but the entire mass would again become compact. In the latter case, the soil is enriched, but no additional facitity is given to the roots to obtain the supplies which are added for promoting the growth of the next crop; in the former instance the fresh manure adds food for the crop and offers facilities for its use.

We have other reasons which favour the ap-

plication of dung to the fallows whilst the fermentation is in its earliest stage. In the fermentation of dung, we have important chemical changes taking place amongst the elements which enter into its composition. The great object in fermenting manure is to bring waste matter from the animal body and certain products of vegetable life into such a condition that they can again be useful for the support of vegetation.—This fermentation of the dung may be carried out in two ways : the one will materially diminish its fertilizing powers; but by the other plan the the change may be controlled so that the the manurial properties may, in a great measure, be preserved, although some slight loss is inevitable. I have estimated, from the analysis given by Dr. Voelcker as the results of an examination of farm-yard manure in its fresh and also in its well-rotted condition, that the ingredients in very superior manure, calculated at their market value, nre worth 1s. per ton more when the dung is in a fresh condition, than when it has become thoroughly decayed. This loss is experienced when the mannre has been carefully fermented for experimental purposes; but when the decomposition takes place under careless management, when, for instance, the drainage from the manure is not carefully preserved—the waste is far greater, so as materially to affect the finances of the farm. In the application of dung in the early stage of the fermentation, we have this change taking place in the soil under circumstances which ensure us against loss; for we know enough of the power of these retentive soils to be assured that what is entrusted to their custody will be safely retained for promoting vegetable growth.

The best evidence as to the store of fertilizing matter obtained from the soil by tillage, is the fact that some are disposed to rely exclusively on this for their successive crops. Without entering into the merits of this mode of culture, or attempting to define either the limits of fertility thus obtoinable, or the economical advantages or disadvantages attendant on such a system we at once recognize the great value of this supply, and the importance of applying all ordinary means for its developement. In the use of farm yard dung, we may materially assist in this decomposition of the soil; for, when the manure is added in a fresh and unfermented state, whilst its decay is taking place in the land it promotes the decomposition of the materials in the soil, and thus renders them available for vegetable growth. In this manner we not only add a certain quantity of manure to the land, but, by applying it so that its decay shall take place in the soil, we gain from the inert and inactive portion of the soil a further contribution of fertilizing matter. This influence would be considerably reduced—I might almost say lost—if the same manure were employed in a well-rotted condition, because it will have passed through its fermentation, in which stage it exerts this influence. This is, therefore, an additional reason for checking the decomposition of the manure until it has been applied to the fallow land. If there is a sufficient supply of dung free for the fallow and the land is tolerably clean, there can be no objection to its application before the winter ploughing; but neither of these conditions is usual, and hence land intended for fallowing seldom receives any dung before winter. The reasons given above favor the application of the dung as early as the land is ready for it.

When lime and dung are both to be used upon a fallow, care must be taken not to apply them at the same time; otherwise, from their combination on the surface, ammonia will be set free and lost in the atmosphere. But, with due precaution, the two may be employed in the same season, and not only without loss, but with great advantage. The dung may generally be applied in a fresh state, before the second spring ploughing, after which the lime may be spread on the surface, and worked into the soil. The combination of these fertilizers under the surface of the land will, after the tillage, increase the benefit derived from each separately. As the sun has great power at the season of the year when farmyard manure is commonly spread on the fallows, the labour of the field should be so adjusted that the plough may follow the cart closely enough to bury the dung before it has lost its moisture.

Fallow Crops.—The action of manure on these crops is very similar to that on fallows, so that the further consideration of its application resolves itself into a notice of special requirements of each crop.

Mangel Wurzel is one of the most valuable roots cultivated upon stiff land. Three modes of applying farm-yard manure are in use :—

1st. That of ridging the land, spreading the dung between the drills, and splitting the ridges in the autumn.

2nd. That of ridging the land in autumn, but delaying the application of manure till spring.

3rd. That of laying on the manure in the autumn, and either covering it by a deep ploughing, or by working it into the soil by the steam-power cultivators.

It may be urged, on behalf of the first method, that as an early sowing of the seed is important, and the difficulties of spring tillage on a retentive soil in a wet season are considerable, nothing should be postponed until the spring except the actual sowing of the seed. On behalf of the second method, we may remark that the many demands on the stock of manure in the autumn, and the convenience of doing the carting to distant fields during the winter frosts, will frequently render its adoption desirable. The advocates of deep cultivation who are fortunate enough to have a grateful subsoil will generally adopt the third method, with perhaps as much eye to the permanent improvement of the soil as the immediate benefit of the root crop. This method has the further advantage of effecting a more equal

distribution of the manure throughout the soil, and in this respect we avoid an important defect of the ridge system; for, although by ploughing or cultivating accross the ridges, when the land is prepared for the succeeding crop, we may then obviate much of the future evil, still it should be more generally known that the quality and weight of the crop itself are often prejudically influenced by the manure being retained within such narrow limits.—*Journal of Royal Agricultural Society of England.*

Spirit of the Agricultural Press.

Pasturing Meadow and Clover Lands.

Irreparable injury is sometimes done to meadows and clover lands by hard stocking late in the fall or early in the spring. Sheep in particular, by eating close often seriously injure the crown of the clover plant, and thereby either kill it or greatly injure its after growth. We subjoin some pertinent remarks on this matter from the *Valley Farmer*:—

Stock should always be turned off from clover so early in the fall as to allow the plants to make a growth of leaves sufficient to protect them from the action of the snow and frosts of winter. When eaten off to the ground, and the surface becomes trod hard and compact, the roots will be drawn up frequently three inches above the surface before spring.

If clover and meadow lands have already received close fall feeding, by all means stock should be kept off during February and March, so that the surface may become somewhat lightened by the rain and frosts, that the tender growth of spring may proceed without injury. One hundred pounds of feed gleaned from a clover or timothy field in the winter or early spring, will cut short the crop of the coming season five hundred pounds or more; so that it will prove the most miserable economy to allow a hoof to press upon lands that are intended either for hay or summer pasturage.

Corn-Cob Meal for Feeding.

A Connecticut farmer gives the following as his experience on feeding corn-cob meal to cattle:—

I have fed corn-cob meal for many years, both to cattle and horses, as I suppose with decided advantage, and as I never had any animals sicken when on this diet, I infer that there is nothing injurious about it. To working oxen or milch cows I have never exceeded four quarts per day, and to fattening animals double the quantity. These last had a bushel of roots daily. I prefer a mixed feed, grinding oats with the corn for oxen, and rye for milch cows. It is very well known that corn meal alone is very heavy feed, and unless great caution is used, animals become sickened. Now the cobs ground up with the corn, even if they contain no nutriment, which is far from being proved, form an excellent divisor to separate the meal and create the stimulus of distention in the stomach, so essential to the perfect digestion of its contents. For this purpose we give cut straw with meal, not supposing when it is fully ripe it has much more nutriment in it than good saw-dust.

Fall of Drains.

At a Legislative Agricultural meeting held at the State House in Boston, the subject of underdraining being under discussion, Mr. Sheed, an Agricultural engineer, said he had drained a lot in Milton where there was only two inches of fall to a quarter of a mile, and the drain worked well. If there is a fall of three inches to the hundred feet in land, a tile drain with two inches diameter drains forty feet apart, four feet deep, would take off all the water, and he would guarantee it would work satisfactorily. All soils resting on a tenacious subsoil, could be advantageously drained.

[Eight inches fall in a mile might be found sufficient in drains constantly conveying a limited quantity of water, but for general purposes of under-ground draining such a fall could not be depended on. Three inches to the hundred feet would be found quite sufficient, but drains forty feet apart and four feet deep, in a wet, stiff soil, would in very few cases be found near enough to effect perfect or uniform drainage. However, in a country where capital for such purposes is but scanty, the best way is to place the drains at first wide apart, and if subsequently found inadequate, others can readily be put between.

[*Ed. C. A.*

Raising Early Calves.

A correspondent of the Connecticut *Homestead*, in a recent number of that journal makes the following remarks in reference to his experience in raising early calves:—

It is my practice to raise one or more winter calves every year, and the advantages are many. First, butter is always worth more in winter than in summer, so that new milch cows are more profitable at that time of year than in the warm season, and with good care and feed, they will give as much milk in winter as in summer. Second, if the farmer wishes to buy calves, they can be bought much lower in the fall and

winter than in the spring. Third, they are apt to receive more attention during winter, because the farmer is about the barn more, and can provide for their wants better than in summer, when he is necessarily busy about the farm. Fourth, they are ready to turn out as soon as the grass will give a good bite, and they will be strong and healthy, and better prepared to withstand the cold of winter than late ones. Lastly, they are ready to market six months or a year earlier than the late ones. They should have new milk at least two weeks, and then skim milk may be given once a day for another week, when it can be substituted entirely for new milk, but it should not be given to them in such quantities as to cause them to scour. After they are five weeks old, a little linseed oilmeal may be put into their milk, increasing the quantity from time to time, and when they are eight weeks old, if milk is scarce, they can be fed wholly on it, put into a little warm water. At this time they will relish a few roots, and they will do them good. I have fed a calf this winter on beef scraps, a single handful, dissolved in warm water, night and morning, and he did as well on it as he did on skim-milk. Calves should lie loose, in a warm airy place, have plenty of litter, and plenty of good fine or aftermath hay to eat, and occasionally a shovelful of dirt to lick. Calves raised in this way cannot fail to be good ones, especially if a good breed.

Salt for Mangel Wurzel.

An old and talented correspondent of the *Mark Lane Express* strongly recommends salt, from his own experience, as a very valuable manure. He found that a liberal application of it to the ground in autumn, intended for spring cropping, acted beneficially in a mechanical manner in bringing the soil into a mellow friable state, while the roots or seeds of the most troublesome weeds were either destroyed, or their vital energy very much impaired. The slug and wireworm (the latter is often very injurious here in Canada) were also either killed, or very much diminished thereby. A large sprinkling of salt was sown broadcast on the surface in the autumn after the land had been deeply plowed, and exposed to atmospheric action during winter, and then plowing was given in the spring and a suitable tilth obtained, the mangels sown vegetated, grew apace, and produced a heavier crop than under ordinary treatment. There was no difficulty in keeping the land clean, as very few weeds made their appearance. The writer found a smaller amount of salt added in spring increased still more the amount of the crop. And he found that other roots and also grasses, and the cereals, were considerably improved by its application.

Salt thus appears to be a safe and economical manure, provided it be not applied directly to the cereals or grasses in too large a quantity, for in that case it will, for a time at least, materially injure them, if not ultimately destroy them. No soils naturally have too much of salt, except those directly injured by brine springs. One of its most valuable properties is to attract moisture. For this reason it may be sown when the soil is perfectly dry,—a condition so fatal to many manures, and will absorb the moisture from the atmosphere, and convey it to the root of the plant. Its principal office is to keep every thing in the soil in a soluble state, and consequently in a state fit for the nourishment of vegetable life. Its benefit is not alone experienced by the root crop, bnt by the grain crop which follows, for its presence checks the redundance of straw, and enables that straw to strengthen itself by assimilating from the soil the silica, of which, in certain combinations, it is solvent. The coarse, refine material of salt works is what is more generally used in agriculture, and may be procured we presume at a low rate of charge from Syracuse, or other places where the pure article is properly prepared for market.

Agricultural Intelligence.

A Canadian Drill Plough in England.

A late English exchange thus notices an implement introduced from Canada:—"The Sovereign drill plow, like the reaping machine, is a gift from the New World to the Old, and is the invention of Mr. L. Sovereign, of Canada. Its powers were lately tried and five furrows were made at one time by a single plough drawn by two horses, which at the same time sowed with barley and clover, turning the flowers clean over the seeeds so as to cover them safely from birds. This implement, which wieghs no more than 5cwt. is as rough and ready as a bush harrow, and, like all colonial machines, has no mechanism about it that a common tool-box will not suffice to repair. It cousists of five ploughshares of cast steel, light and strong, placed transversely on a frame of five longitudinal beams. This frame is suspended on three wheals, two on one side and the other running in the furrow. The ordinary line of draught in ploughs is thus modified, and the friction of the weight carried off in the revolution of the wheels. Two boxes are fixed on the frame, one for larger seeds (from beans to wheat,) the other for grass seed. The distribution is regulated by very simple mechanism—the mere turning of a screw by the driver acts by a wedge on a plate, which defines any given quantity to an acre; while a copper slide to each conductor closes or opens it according to the number of rows requisite to be sown. The advantageous simplicity of this arrangement will be evident to every practical man. A pair of light harrows were fixed behind, and thus completed the three processes of ploughing, sowing,

and harrowing at one operation. The ploughshares are removeable, and give place to scarifiers or cultivators where requisite, so that the implement may be termed a universal tool for tillage purposes. It worked admirably on a wet and heavy soil, making straight furrows, and laying them over evenly; on lighter soils it seems to be extensively used.

Shipment of Stock for America.

We find the following paragraph in reference to the shipment of stock referred to in a communication in our last number, in the *Annan Observer*.

"On Wednesday the *Helen Douglas*, of Annan, started from Annan Waterfoot for Quebec, freighted with a full cargo of stock for America. She has been chartered by three parties who have for some months past been purchasing farm stock for shipment to Canada and New York State, namely: Mr. George Miller, of Markham, near Toronto,—formerly of Riggfoot in the parish of Cummertrees,—who has re-visited his native country after an absence of nearly thirty years; by Simon Beattie, also from Markham—a Nephew of Mr. James Beattie in Newbie; and by Mr. Brodie, of New York State, a native of Ayrshire. Mr. Miller takes out six Galloway Cattle, purchased from Mr. Graham, of Shaw; one Ayrshire cow and calf; two cotswold rams, and six gimmers from Glocestershire; one ram and ten gimmers, Shropshire Downs; five Liecester rams and eight gimmers from the stock of Mr. Wilkins, of Tinwald Downs; and two Cheviot rams and nine gimmers, from the stock of Mr. Graham Shaw. He also takes with him three Boars, and a Sow and pigs; some poultry; a large cock and hen pheasant from Knockhill; and a beautiful Mule for the use of Miss Miller, who accompanies her father. Mr. Beattie's stock consists of a two year-old Durham heifer, from the no less famous Newbie Galloway herd; an Ayrshire Cow; a very fine Cotswold ram, and four gimmers from the stock of Mr. Walker of North Leech, Gloucestershire; two Leicester rams, twelve shearling rams, and six gimmers from the well-known Leicester stocks of Messrs. Simpson, Sandys & Barton, in Yorkshire, and of Mr. Beattie, Newbie. The sheep have all been selected with great care—the Leicester Rams at a cost of not less than £15 sterling a piece, (*equal to* $75 *each.*) Mr. Brodie takes out to New York State, by way of Quebec, an Ayrshire Bull, a Cow and three Heifers, selected from the best dairy stocks in Ayrshire; two Leicester rams, and six gimmers, and three Highland sheep. There are also on board sheep dogs and two greyhounds, and a number of farming implements, as well as an abundance of Swedes, mangel wurzel, oil cake, corn, hay, &c., as provisions for the stock during the voyage."

Steam Plows.—An eminent Liverpool planter is about shipping a steam plow to his extensive plantations in Demerara. A competent man will follow to put the plow to work on arrival. On its satisfactory working depends other orders, and from what we know, we are justified in saying that cultivation by steam power is a want long felt by the growers of sugar, coffee, and cotton. This new power is likely to be introduced to meet the disturbed state of labor both in the Southern States of America and elsewhere. It remains only to add that if the steam plows can only be set to work fairly by the intelligent laborer, the alarm now felt as regards the present altered state of the American cotton planters will soon be removed. A new, well-manufactured two-furrow steam plow is being brought out under the auspices of Messrs. Richmond and Norton, the well-known implement agents, South John-street, Liverpool, the price of which, we understand, is very moderate.—*Vide Warrington Guardian of March* 16, 1861.

Teetotal Plowing "Days."—At Scales Farm, near Richmond, Yorkshire, Mr. William Wilson (formerly of Skeeby) held a plowing day on the 8th of February, on strictly teetotal principles. The men had plenty of coffee and spice bread at ten o'clock, at noon a good dinner, and between three and four o'clock in the afternoon plenty of coffee and spice-bread. At Warton, within three miles of the above place, Mr. Harker held a plowing day on the same principles—no alcohol in any shape, but plenty of coffee, plum-pudding and beef, and we hear a few complaints; of course, there are some "thirsty souls" who would like a beer-barrel in the field continually. At Union House Farm, near Skeeby, about two miles from Richmond, R M. Jacques Esq., of Easby Abbey, held a plowing day on Wednesday, March 13th, on the same principles—no strong drink at all—coffee and spice-bread at ten o'clock; also just before dinner each plowman and driver was presented with a shilling each. At half-past twelve at noon a first-rate dinner was served up by Mr. and Mrs. Hall, Temperance Hotel, Richmond—splendid plum puddings, first-rate beef, also coffee to drink after dinner. Again at three o'clock came on bread and coffee, as before. The men worked like men; they appeared quite cheerful, contented, and happy. We heard no profane swearing or lewd jests, and the men are more likely to return home like good fellows, and be fit for their work on the morrow. If we mistake not, great credit is due to Mr. William Wilson, Mr. Harker, R. M. Jaques, Esq., also his worthy agent, Mr. H. J. Turner, of Richmond, for their example by facing the old custom of giving strong drink, which deceives men, and makes the plowman, as well as the gentleman "not wise." We were pleased with a remark from Mr. Turner to this effect, that farmers generally sent to plowing days a valuable team, if they had one

—sometimes worth £100. The men are generally primed with drink on those occasions, and a valuable team of horses is left to the charge of a man who cannot take care of himself. We hope the day is not far distant when all plowing days will be conducted on the same safe side, also all other work, whether farming or otherwise. A vast amount of trouble and vexation would be prevented, to say nothing about the gain in pounds, shillings, and pence in the long run. Let the men be well treated, mix a little silver along with kind usage, and no one need fear a teetotal plowing day.

Horticultural.

Cutler's Seedling Strawberry.—This variety after ten years trial is said by J. W. Manning, of Reading, Mass. to be distinguished for the following qualities:—It is a thrifty and strong grower; blossom perfect, a great bearer; of good size and flavour; is very hardy, and continues bearing longer than other varieties.

The Union Village Grape:—The *Horticulturist* for May has an engraving of a fine branch of this grape, which is a seedling of the Isabella, and was originated by the Shakers of Union Village. It is described as a vigorous grower, making handsome short jointed wood, and the whole plant, wood, leaves, and fruit of an unusual size. It is sweeter and better than the Isabella in quality and at least a week earlier. The vine is said not to ripen fully, its wood in some places, owing to the rampant growth, and in Canada, we should think, it would need some protection. But is pronounced to be certainly as hardy as the Isabella.—We shall be glad to hear from any of our readers, if any, that have tried it.

The Ontario Grape.—Dr. O. F. Presbrey, of Buffalo, N.Y. gives the following description of this grape in the *Boston Cultivator*: by some it is thought to be identical with the preceding: "This new variety originated in Canada, near Lake Ontario, from which it is named. A native vine, bearing the superior fruit, was found in the woods, and was removed to a garden, in close proximity to an Isabella and a Black Hamburg, and fruited. The seeds of this fruit were planted, and the Ontario was one of its results."

Dr. P. says:—"The vine is a vigorous grower, a prolific bearer,—perfectly hardy,—never mildews,—does not drop its fruit,—grows in compact and cylindrinical clusters weighing from 1 to 2½ lbs., with berries from ⅞ to 1¼ inches in diameter; ripened in 1859 and '60 from 15 to 20 days earlier than the Isabella. It has less pulp than tee Concotd or Isabellp. The fruit is a jet black, covered with a rich velvet bloom, and is larger and more showy than the Black Hamburg." It was exhibited at the New York State Agricultural Society last fall, on which occosion the Country Gentleman said, "it excited much attention. The bunches measured eight inches long, and we were assured that some had weighed 2½ lbs. The berries were ⅞ of an inch in diameter. They appeared to be well ripened, and Dr. Presbrey assured us that this sort had proved 20 days earlier than the Isabella, and 10 earlier than the Concord. The berries were nearly free from pulp, possessed little or no foxiness, were juicy and quite agreeable, and moderately high flavoured."

The Southern Cultvator says:—"It seems to belong to the Isabella family, though, (unlike the Isabella) all the berries uon the bunch ripen Bvnches *very large*, shouldered, compact, often weighing from 1 to 1¾ lbs.; berries also very large, nearly or quite round, black, with little bloom; pulp tender and dissolving; flavor mild, sweet, luscious, with little or no trace of muskiness. *Superior for the table*, and the best grape of its class yet fruited here."

It is proper to state that the fruit-committee of the Massachusetts Horticultural Society, in their last repart, state that they regard the Ontario as identical with the Union Village grape. Dr. Presbrey, however, declares that it differs widely from that variety. Dr. P. is propagating the vines for sale. His address is Prospect-Hill Vineyard, Buffalo, N. Y.

The Delaware Grape.—This delicious grape was introduced to the public by Mr. Thomson, of Delaware, Ohio. Its great excellence at once attracted attention. Indeed, so highly was it esteemed, that many supposed it to be a foreign vine, identical with the Rose Chasselas, and thousands of vines of that variety were sold for the Delaware.

It is difficult to understand how any one, familiar with the Frost and Clinton grape should have failed for one moment to recognise its origin.

Some of our western horticulturists, if not in theory, at least in practice, appear to have understood its relation to the Clinton, for I have growing upon my grounds four vines obtained from Cincinnati, bought as Delawares, and for which I had the pleasure of paying twenty-one dollars. They turned out to be Clintons, and could have been obtained of Hovey & Co-, for about one dollar each. Mr. Cabot, Mr. Walker, and several others, were treated to the same happy result.

Our Cincinnati friends have at last found out their mistake, and are planting their vineyards entirely with Delawares. Mr. John E. Motier

is planting them by the thousands, "and is determined to plant no other vine." Mr. Frederick Schnicke, thinks it not only best American grape, but the best in the world.

From these and very many other testimonials, it would appear that the Deleware is likely to have full justice done to it.

The Delaware is at first a slow grower, but when once establised is all that could be desired. It is perfectly hardy, and ripening its fruit full three weeks before the Isabella. The limbs and berries are medium size, and of a rich vine color.

It is difficult to describe the flavor of this grape. To say that it is juicy, winey, sugary, spicey, with a fine delicate aroma, is to use words that convey very little meaning except to those who are familiar with the fruit.

The above description is furnished us by Mr. E. A. Brackett, of Winchester, a gentleman of large exprience in grape culture, and who is perhaps as well qualified to judge of grapes as any person among us.—*New England Farmer.*

Water Cress.

A correspondent of the Horticulturist gives this simple method of growing Water Cress:—"This salad is easily raised wherever there is a well or pump. Take flooring boards, and make a tank four feet wide and one deep: pitch the seams, and sink in the earth; fill with good soil, and set plants. Rnn in all spilt water.

"I have raised it in this way for three years, a bed of the above size furnishing an ample supply. The last two years I sashed it, and cut from 1st of May until the middle of December. It should have a warm aspect to get it in bearing early, but it is better shaded by an arbor of beans, squash, etc., in July and August, or the sun is apt to cook it."

Bees and Fruit Trees.

A writer in a literary journal of Paris states that the bees greatly improve the fructification of fruit trees. Orchards in which several hives are kept, always produce more fruit than those in which there are none. In the provinces on the Rhine, the fruits are more abundant and finer than in any other part of Germany, and there it is the custom to keep large quantities of bees. Plants, too, which bees visit, thrive better in the neighborhood of hives.

Greenhouse Plants in Rooms.

The various greenhouse plants which are kept in rooms require a constant supply of water, which should always be applied on the tops of the pots, and from no consideration whatever should any be suffered to remain in the water pans or saucers under the pots, and they must also be kept clean from dead leaves, &c. They must be fumigated when there is any appearace of insects. With respect to air, the plants should have a good share in fine, warm weather. It is a very common practice to open the under sash window where the plants stand; when thus exposed to the draft it injures them more than if they were entirely exposed to the open air. When they begin to grow long and spindling, the tops of the shoots should be nipped off with a pair of scissors, which will cause them to become thick and bushy.

Hardy Grapes.

Mr. Wm. A. Woodard, of Mortonville, N.Y. has communicated to the *Horticulturist* the results of observations he has been making upon grapevines on his premises in regard to their capacity of withstanding the severe changes of winter. He residence, he says, is in the highlands of the Hudson, at an elevation of about four hundred feet above the Hudson river, (lat. 41° 30′ and where the thermometer sometimes indicates 30° below zero. The following he classes as perfectly hardy with him. They were exposed to the open air, tied to a trellis, and not protected in any manner. They are three years old, and grew last year strong, healthy wood, which was pruned down to four feet last fall, and intended for fruiting in 1861.

Clinton—Wood of last year's growth, 15 feet, very strong, ripe early, now green and healthy to the end.

Hartford Prolific—Growth 10 feet, strong, ripe wood, uninjured.

Concord—Growth 15 to 18 feet, strong, vigorous, ripe wood, uninjured.

Perkins—Growth 20 feet, robust, large, ripe, wood unijunred.

Early Northern Muscadine—Growth 16 feet, strong, and vigorous, uninjured.

New Native of Orange Co.—Fruit ripened by first week in September; wood fully ripe by first of October, uninjured.

The following he considers *half-hardy* and recommends protection for them during winter: Isabella, Catawba, Diana, Tokalon, Union Village, Garrigues, American Hamburg, Hyde's Eliza.—*Maine Farmer.*

Dwarf Pears.

[The following paper was recently read before the Hamilton Horticultural club, by Mr. Charles weston, gardener, of that city.]

There is perhaps no hardy fruit tree that claims our attention at present more than does the pear, and more especially the pear grown as a dwarf. At a time when peaches, the finer varieties of cherries, (and to a great extent the plum) are cut off from the effects of a severe winter, it behoves every cultivator of fruit trees

to do something towards the cultivation of the pear as a dwarf. There are several reasons which might be urged for the cultivation of the pear as a dwarf. I shall content myself with naming four. The first is hardniess; second, early productiveness; third, the number of varieties that can be grown on a limited space of ground; fourth, the facility afforded for summer pruning, thinning the fruit, detecting insects, and the security of the fruit from being blown off the trees by high winds.

Hardiness.—In this respect the pear seems to stand next to the apple; for the low temperature with which we were visited early in March, proving fatal to peaches and cherries, has not in the least injured the dwarf. The blossom buds of most varieties of pear are apparently as little effected by a (winter) temperature of 16 or 20 degrees below zero (if the wood is thoroughly ripened the previous summer) as are apples, is satisfactorily proved the past winter.

Early Productiveness.—Many varieties of pears worked on the quince, if judiciously root-pruned, and young wood pinched in summer, will bear fruit at from three to four years from the bud in graft; and, barring spring frosts while in blossom, we may depend on them bearing regularly afterwards. Root-pruned trees in a bearing state are in no danger of being winter killed or blighted. The principal thing to guard against is overcropping; for although a pear tree may bear fruit at two years from the bud or graft, it must not *in every instance* be allowed to bear as much as it would, or the result will certainly be a stunted growth for several years, and a probability of the ultimate loss of the tree. I prefer five or six fine sized fruit from a young tree, in preference to a dozen inferior both in size and flavor.

The number of Trees which can be grown on a limited space of ground as compared with standard Trees on the free stalk.—The distance apart at which standards have been planted is from 18 to 24 feet, and with many varieties the planter or cultivator would have to wait at least a dozen years before he had the satisfaction of tasting fruit from them; whereas dwarf trees may be planted from five to six feet apart, root-pruned annually or bi-ennially, and summer pruned. Many years will elapse ere the trees get overcowded. Should they become so, the facility with which they can be removed is a great recommendation. I may mention that on the the 11th of April, 1860, I had four pear trees removed from where they had been growing for three years, but had not fruited, although root-pruned twice; three out of the four trees bore a fair crop of excellent fruit the same season. Three of the varieties were Glout Morceau, Buffam, Belle Lucrative. The other I cannot name with certainty.

Another reason to be urged in favour of dwarf pear trees is the facility with which they can, or should be, attended to in summer. The various manipulations requiring attention during the growing season are thinning the blossom buds, impregnation of the shy setting sorts, thinning the fruit, pinching, or summer pruning the young shoots, and destroying insects; all of which can be got at from the ground without the trouble of steps or ladder. The operator can get over double the number of trees, and do the work equally well, when such is under the eye and hand, as when he has to climb ever so short a distance. Dwarf trees, especially in exposed situations, are not so liable to be injured from the effects of strong winds. Large varieties, such as the Duchesse d' Angoulême, Burre Diel, Bartlett, &, on standard trees, especially in exposed situations, are so much rubbed, if not shaken off the tree, as to be rendered almost useless, either for stewing or dessert.

Soil to suit the pear should be pretty strong, rich, naturally dry, or drained artificially, and well supplied with manure. Pear trees on this plan, from four to six feet high, branched to within twelve inches of the surface of the soil root, pruned four times in six years, receive annually a good covering of decomposing stable-yard manure before winter, and in spring before the frost is out of the ground, (say March) each tree has from six to eight gallons of cesspool sediment put over the surface of the soil as far as the roots extend, and allowed to wash in by the spring rains. The result of such liberal treatment has hitherto proved very satisfactory.

Root-pruning may be defined as digging a trench about the tree at a distance of one foot from the stem, (for a tree of from two to four years old) and to a depth of 12 inches, or until the lowest roots are reached. Should the tree be vigorous, one-half of the roots thus exposed may be cut off—using a very sharp spade or knife—and the spade inserted under the ball of soil so as to reach the top root, but returning the ball as whole as possible. The soil removed in exposing the root is now to be filled in; and should the ground be dry, each tree operated upon will require over 10 gallons of water. The object in root-pruning is to give the tree a healthy check, —not too much at one time—but should that not be obtained the first time, the operation must be repeated at a distance of three or four inches further from the stem than on the previous occasion, i. e., at 15 or 16 inches from the stem of the tree all round, leaving a ball of about 30 inches in diameter, when the roots, left uncut at last pruning, may now be cut, and the tree laid a *little* on one side, so that every root, thicker than a goose-quill, protruding beyond the ball aforesaid, shall be removed, the soil filled in the trench, and the tree as it were planted afresh. In root-pruning a very vigorous fruit-tree that has been growing undisturbed for a few years, some caution is necessary at the first operation so as not to cut off too many roots at once; but after the first pruning, the cut roots producing so many fibres or small roots that it

would be difficult to injure the tree if done at the right season, and the proper distance from the stem.

A small selection of Pears that do well in the neighbourhood of Hamilton.—Madeline, a Citron or Carmes, very fine medium sized fruit, ripe early in August. Bartlett, an unnsual favourite, large, ripe in September. Belle Lucrature, fine fruit, large, ripe in October. Beurre Diel, very large and prolific, ripe, November to December. White Doyenne, medium size, ripe, September to November. Flemish Beauty, large and fine, ripe in October. Duche s de Angoulime, very large, ripe in November.—Seckel, a much esteemed small pear, ripe in October. Tyson, a refreshing pear to cut off the tree, but does not keep after ripe. Beurre de Aremburg, medium size, December to January. Glout Marceau, large, ripe, December to January. Napoleon, large, regular bearer, September and October.

Summer pruning, thinning the fruit, gathering and keeping of fruit, &c., may form the subject for another paper, or be brought out in the discussion.

Hamilton, May, 1861.

Growing Cuttings in Flower Pots.

When cuttings of flower plants have struck root, they should first be put into small sized pots; and if they are not to remain a very long time in their first pots, a bit of moss at the bottom will do for drainage as well as a piece of broken pot, though, as the latter is m re conveniently to be had, it is more generally used. Let the mould or compost be filled in highest in the middle, like a cone, the top of which may be even with the top edge of the pot; raise the cuttings with a flat piece of wood formed like the blade of a knife, raising them clean out of the soil, or the pot a few at a time. They have to be carefully treated, so that the roots, which are always tender, be not broken by the operation. Hold the root on the top of the cone, so as to spread the fibres; then put a little soil on the root and press the plant down to its place, so that the upper part of the root will be just covered—for many plants are all the worse for being placed with the root much below the surface. The tender roots must not be pressed hard, as this would injure them, and the watering settles the roots and the soil together very well. This treatment will suit any plant, but there are some which will strike all the way up the stem if they are planted deep, such as geraniums, which would root at every joint, and many other plants which would strike freely. But all hard wooded plants would be seriously damaged, and in many cases killed, were they what is called planted deep.

The Dairy.

Soiling Advantageous to Dairymen.

The Watertown (N. Y.) Reformer has been furnished with the proceedings of the Farmers' Club at Belleville, in which we find that the following Report on the practice of soiling was unamiously approved:

Let five acres be appropriated to pasturing ten cows during six months, commencing with the 1st of May. One-half acre may be sown to winter barley or rye, which can be commenced being used for feed by the first of June. This, at one and a half tons per acre, will supply the cows 10 pounds a day, which is all they will eat in addition to what they get from the pasture, and will last to June 15. One acre of clover, which will be amply large to commence feeding by the time the rye is gone, at two tons per acre, will last 30 days, or until July 15. One-half acre of oats and barley will supply the demand from this date until Aug. 1. One acre of corn, which has been sown early, will be ready to feed, which, at a yield of 4 tons per acre, at 20 pounds per day, will last 40 days more, or until Sept. 10. Now, as the barley or rye will have been fed by June 15th, there will be ample time to raise a crop of sowed corn on the same ground, which will obtain sufficient growth to be used by Sept. 10th, and, according to previous allowance, will last until Oct. 1st, from which until the first of Nov., then the cows should go into winter quaters, a half acre of corn fodder is an ample provision, and a large part of it will be left for winter use.

Now for the winter keeping. In the first place, they should have good, warm, well ventilated and well littered stables, plenty of good water, and be regularly fed. Three-fourths acre of carrots at 700 bushels per acre, would yield 525 bushels; also three-fourths acre of beets at the same rate, 525 bushels. If the carrots should be fed from Nov. 1st, at the rate of one bushel per day for each cow, they would last until Feb. 10th, from which time the beets may be fed until June 1st, which is the time the green feed is to be used. Two acres planted to corn at a yield of 40 bushels, and three acres sown to oats, peas, and barley at the same rate, would yield a total of 200 bushels, which would be sufficient to give each cow three quarts per day during the six months of winter feeding. The pumpkins raised with the corn, could be fed during the month of October. Five acres of grass at two tons per acre, together with the straw and cornstalks, would supply sufficient fodder for the cows, together with feed enough for a team to do all the work to be done on the land. The manure made by these ten cows, if they were stabled nights, as they should be, during the summer, and all the time during the winter, would be ten loads each, or 100 loads in all, which, at 20 loads per acre, would give you a thorough manuring once in

four years. To this add a top-dressing of plaster and enough nutriment is given to the soil to warrant the above estimates.

Ten good cows with such keeping, will produce a yearly average of butter and cheese worth at least $40, or a total of $400, and the soil, instead of being impoverished, as it certainly must be by a continted system of grain raising, will be constantly increasing in fertility.

Veterinary.

Keeping Horses' Legs and Feet in order. —If I were asked to account for my horses' legs and feet being in better order than those of my neighbour, I should attribute it to the four following circumstances: First, that they are all shod with few nails, so placed in the shoe as to permit the foot to expand every time they move; second, that they all live in boxes instead of stalls, and can move whenever they please; third, that they have two hours daily walking exercise when they are not at work; and fourth, that I have not a head-stall or track-chain in my stall. These four circumstances comprehend the whole mystery of keeping horses' legs fine, and their feet in sound working condition up to a good old age.—*Miles.*

Remedy for the Scour in Lambs.—Take the seed of the common dock, make a strong decoction, sweeten with loaf sugar, add half a teaspoonful of cayenne pepper to a quart; give to each lamb a wineglassful three or four times a-day until a cure is effected. Mr. Higgins's shepherd, of Wishford, tried it last year, and never lost a lamb during the season.

Remedy for Blind Staggers.—A writer in the Charleston Courier gives "an effectual remedy for that formidable disease in horses, the blind staggers," the recipe being as follows:— "Gum camphor, one ounce; whisky or brandy, one pint—dissolve. Dose—One gill, in a half pint of gum arabic, flax seed, or other mucilaginous tea, given every three or four hours; seldom necessary to give more than three doses. The horse must be kept from water twenty-four hours. Never bleed in this disease."

Cattle Disease.

DIRECTIONS AS TO TREATMENT OF INFECTED HERDS. BY DR. S. COPEMAN, V. S.

Quarantine.—No neat cattle in the infected herds to be bought or sold under any pretext; all the cows to be kept in the stables, the young stock to be carefully secured in barnyard or sheds; in other words, communication with other cattle to be rigidly guarded against. The stables to be kept carefully cleaned and well ventilated.

Care of the Infected Herds. Every animal to be watched closely. If any show symptoms of disease, it should immediately be removed to some convenient place for observation or treatment. More than ordinary care should be given to the whole herd; keep them warm, clean and dry; give a liberal supply of nutritive food and clean water.

Symptoms of the Disease.—Among the earliest indications of this malady are dry, husky cough, fastidious appetite, staring of the coat, and in a short time the breathing becomes more or less laborious; horns, ears and legs alternately hot and cold, an occasional chill; the animal wanders slowly from the herd, with drooping head, grinds its teeth, and, if disturbed, a wheezing cough or short grunt may be heard.

Treatment of the Sick.— On the appearance of the disease the sick animals should at once be *separated* from the herd, rigidly confining them to appropriate sheds, removed at considerable distance from all other cattle on the farm; keep the sick warm, quiet and clean; feed liberally with any kind of food it will eat. If the appetite fail give two quarts of gruel, sweetened with molasses; half an ounce of ground ginger, annice seeds or caraway seeds may be added, and administered two or three time daily. Each adult animal may also get, morning and night, two drachms of iodide of potassium dissolved in a pint of clear rain water.

Slaughter.—Burial of the dead.—After an extensive experience and close observation, I am convinced that the safest and best means to combat this direful malady, is the immediate slaughter of all infected animals which do not exhibit marked evidence of improvement after a week or ten days' treatment. The dead to be removed on a "stone-boat" (best) to the woods or some remote place; the carcass to be buried (with the hide on) and covered by at least four feet of earth, to prevent dogs from carrying it off.

[Great care should be taken not to introduce any strange cattle into a herd until they have been tested separately, sufficiently long to ascertain whether the animals are diseased or not.]— *Journal of N. Y. State Ag. Society.*

Transactions.

Abstract of Reports of Agricultural Societies received in the year 1860.

(*Continued from page* 316.)

RENFREW.

County Society.—Eighty-two members; amount of subscriptions, $84; reported by township branches, $165; government grant, $450; entries and sundries, $82.12; total receipts, $781.12. Paid township branches, $343.20; paid balance due treasurer from previous year, $63.40; paid premiums on standing crops and at fall show, $254.20; expenses, $195.75; total expenditure, $860.05; balance due the treasurer, $78.93.

TOWNSHIP BRANCHES.

MacNab.—Fifty-eight members; subscription, $87; balance from 1858; government grant (partly on account of 1858), $175; total receipts, $275,88. Paid for copies of *Agriculturist*, $27.50; paid in premiums, $118 63; expenses, $38.86; balance in hands of treasurer, $110.89.

Ross and Bromley.—Thirty three members; subscriptions, $40; balance from previous year, $63.97; government grant, $43.20; received from clover seed sold, $28; total received, $175.17. Paid for clover seed $32; premiums, $69.15; expenses, $19.45; balance in Treasurer's hands, $54.57.

Westmeath.—Fifty members; subscriptions, $54; government grant, $43.20; total received, $97.20. Paid in premiums, $94.50; expenses, $11.75; balance due treasurer, $9.05.

RUSSELL.

County Society.—Sixty-six members; amount of subscriptions, $66; deposited by township branches, $427.77; government grant, $479.98; total received, $973.75. Paid township branches, $685.77; incidental expenses, $43.40; balance in treasurer's hands, $244.58. Not having obtained their funds till late in the season, the society did not hold an exhibition. They decided to apply their funds to the purchase of Ayrshire bulls for the improvement of the cattle in the county, believing the Ayrshires best adapted to the circumstances of the county.

Extracts from Report.

It is time for our farmers to bestir themselves in the matter of stock raising. If they cannot yet introduce into the country imported animals, the day is not far distant when they can do so. In the meantime, it is in their power to infuse new blood into our Canadian breed; that itself will be a step in the right direction.

The county of Russell has a very level aspect; soil generally good, well adapted to the raising of grain, hay, roots, and stock; great room yet for improvement in the different branches of husbandry, although there are many instances of individual comfort and prosperity.

The crops of last year were better than those of the preceding in every instance, with the exception of hay, which was generally very light. There has not yet been much attention paid to growing root crops, or to horticulture. Arts and manufactures are not in a condition to enable us to make any remarks on the subject. The price of land varies from $10 to $20 per acre, according to quality and location.

In conclusion, the farmers of Russell may well be satisfied with their lot, possessed of soil capable of raising all the necessaries of life in abundance. In close proximity to the future capital of Canada, as well as the great lumbering depot of the Ottawa country, they should redouble their exertions, study their profession scientifically as well as practicaliy, and in due time they will make this fine country what nature intended it for.

TOWNSHIP BRANCHES.

Cumberland and Clarence.—Thirty-four members; amount of subscriptions, $136; share of public grant, $96; total received, $232. Paid in premiums, $197.80; expenses, &c., $34.20. The directors say:

"We regret to observe that the extent of land in fall wheat, in 1859, was considerably less than in the previous year, owing no doubt to the numerous failures then reported. It evidently appears that to ensure good crops of fall wheat more exertion and outlay will be necessary in preparing the land for this crop, as the light lands heretofore chiefly used cannot be relied on. The drainage of the heavy or clay lands, with suitable applications and tillage, must be resorted to before it will be profitable to cultivate extensively this most important crop."

Gloucester.—Forty-one members; subscriptions, $134.77; balance from previous year, $31.90; share of public grant, $96; total receipts, $262.67. Paid premiums, $192.38; copies *Agriculturist*, $9.50; expenses, &c., $59.43; balance in treasurer's hands, $1.36.

Extracts from Report.

Root culture of the different sorts is on the increase. Awards at the Provincial Show being the result. The soil in various parts is well adapted for green crops. The manure heap is better looked after. Sheds for stock rapidly rising throughout the township, not haphazard system, but on the very best principle for utility as regards the animal, comfort, saving of labour, and neatness of design.

Some few have begun draining, while others are in a hopeful condition, wondering and considering if such a thing as a $3\frac{1}{2}$ feet

depth of drain is necessary and possible. At the same time the subsoil of their farms is as retentive as the bottom of a frying-pan—preventing the plough in spring and roasting the roots in summer. This we call your serious attention to, and also to follow the draining with the subsoil plough. We are happy to be able to state that the want of draining tiles, once felt, is now removed; and next summer any supply can be had from Mr. John Singleton & Son, brick and tile factory, near Ottawa.

Osgoode.—Thirty-eight members; subscriptions, $172; share of public grant, $96; total received, $248. Paid incidental expenses and sundries, $35; balance in treasurer's hands, $213. The society did not hold an exhibition, in consequence of not being in possession of their funds till late in the season. They decided to appropriate a portion of their funds to the purchase from a distance of seed grain of a superior character.

Extracts from Report.

In reference to the state of agriculture in the township, your Directors have to remark that on that head, they have not the same facilities as in former years for reporting, nevertheless from their own observation, and such information as they could glean from parties conversant with the subject, they cannot be far wrong in the following remarks: Fall wheat, an average crop, but not extensively sown. Spring wheat, (Fife or Scotch) an average crop; peas and oats very good, above an average crop; potatoes a good crop; Indian corn, almost a total failure, owing to being cut off by frost during the middle of June; hay, a very poor crop, owing in a great measure to severe spring frost, followed in the early part of summer by intense heat and drought, and owing in a certain measure to imperfect cultivation, such as mowing the same meadows, as is too often the case, from four to seven years in succession, which in place of cultivation we should say is no cultivation at all. We do not, however, intend that the foregoing remark should be general in its application. While speaking of the crops of the past year we should not omit mentioning that in our opinion they have not been injured to any serious extent, by any any insect or other cause of blight. Root crops are not extensively cultivated, if we except the turnip.

A great many of our farmers are paying particular attention to the dairy, which they justly look upon as a very important and remunerative branch of husbandry.

In regard to cattle there has been no improvement made in the native breed worth mentioning here, but we are gratified to learn that the County Society has expended its funds for 1859 in the purchase of bulls for the society, and that three splendid animals of the Ayrshire breed have already arrived in the county, being purchased in the vicinity of Montreal.

There is no visible improvement in agricultural implements, except the plough, those cast and made at the foundries throughout the country, and heretofore in general use here, are fast giving away to the iron ploughs made by our own resident mechanics, of whom there are three in the township; all good plough-makers.

There are evident symptoms of a taste for Horticultural pursuits springing up amongst our population, yet they are too limited to elicit anything more than this passing remark.

At the risk of digressing from our subject, we will now give a few specific facts, which will enable the distant reader, (if the eye of such should ever alight on the pages of this report,) to judge of the situation, resources, and future prospects &c, of this township.—It is generally level, with a good deal of swamp, generally good soil, watered by the Rideau on the west side, and many branches of the Castor running through it. The Ottawa and Prescott Rail Road passes through the west end of the township. It has three Post Offices, West Osgoode, Metcalfe and Kenmore, a daily mail runs between Metcalfe in the centre of the township and the Rail Road Station in the Township of Gloucester. It has eight places of public worship. Sixteen Common Schools, all in operation.—There is one Grist and three Saw Mills in the township. It is well settled, the soil and climate being well adapted to the raising of the different varieties of grain and roots grown in Canada.

The price of land varies from $10 to $20 and upwards per acre, according to quality and location. The humble shanties of other days have mostly all disappeared, and their places are supplied by comfortable frame or stone houses, splendid frame barns, sheds, and out houses.

The township of Osgoode is within a few hours travel of the future capital of Canada,

and knowing the energy and determination of its sons we predict for it a bright and prosperous career.

NORTH SIMCOE.

County Society.—Seventy-two members; amount of subscriptions, $98.97; balance from 1858, $56.92; deposited by township branches, $430.75; special subscriptions, donations, &c. $121 35; government grant, $479.98; total receipts, $1187. 97. Paid township branches, $718.74; premiums, $302.02; expenses, $145.82; balance in treasurer's hands, $21.39,

Extracts from Report.

In the North Riding of the County of Simcoe, every variety of soil may be found, and in some localities every variety in the breadth of half a lot. Indeed, even within the precincts of the Town of Barrie—the county town of the County of Simcoe—clay suitable for brick-making, or sand fit for building, may be obtained in any quantity; and, singular as it may appear to persons residing at a distance, better land cannot be found in the Province of Canada for farming purposes, or worse than may be found within the limits of this Town. And if building lots be required, every discription may be obtained here. If the builder delights in the romantic, it is at Barrie that he may be suited; or if he prefers to erect his mansion near the water, let him steer his course to the north shore of Lake Simcoe, where a beautiful sheet of water some twenty miles in extent greets the eye, and where the scenery is unequalled, and, added to this, a more healthful spot cannot be found.

It was here that several half pay officers of the Army and Navy, who had been awarded grants of land, first settled some thirty years ago, and no doubt expended large sums of money in improving their properties. Those gentleman improved first class cattle direct from England, of different breeds, the benefits of which may be seen in the stock of the present day. But, like all other enterprises, the first promoters very rarely enjoy the ultimate advantages; and from causes which it is immaterial to notice here, they abandoned the enterprize, and the property in most instances is now in other hands. True it is, they laboured under many disadvantages, which the present occupiers have no conception of; they were without roads, without schools, and without society, But all these in a great measure are privations of the past; for no community has more cause to be proud of its facilities for the education of the rising generation than the inhabitants of Barrie, and very few have more enjoyments. To take a more extended glance at the soil of this Riding, we may refer to Nottawasaga as the extreme west, a township always famed for wheat and other grain; while Matchadash, the opposite extremity of the riding, is almost useless for farming purposes. Good and bad land will be found in all parts; and allowing four qualities of soil, the north riding of the county of Simcoe, may be considered to stand in the second class.

The northern position of the riding may be considered by many as a great disadvantage, and consequently objectionable. Be it so, nevertheless it has its advantages, for while the more southern districts have neither waggoning or sleighing, the settlers in the north have usually from three to four months good travelling on the snow; and when the rigour of winter is past the snow disappears as if by magic, and the soil is ready for the hand of the husbandman, without frost; the consequence is, spring work is commenced by the farmer in the north nearly as soon as by those settled in the more southern districts. It is only justice to the reader at a distance in a report like this, to state that a large portion of each township will require draining before it will be serviceable for agricultural purposes, but when drained will be the most valuable land. Very extensive tracts of this riding are high and dry, and the subsoil is of such a quality that water cannot be obtained by digging; but notwithstanding this, the land will produce an excellent quality of grain and roots. This situation is frequently chosen as a first residence by the humbler class of settlers, for the reason that every foot of land reclaimed from the forest is available for producing something for themselves and families; for were they in possession of wet land their means would not be adequate to its improvement, and, although superior in quality, it would, in consequence of its wetness, be worthless to them. And it should be borne in mind that the majority of our pioneers, or first settlers, are parties with slender means. But in many instances those persons have been successful, and have realized a very comfortable subsistance, and are enjoying, as working farmers, everything that is required to make a comfortable home.

VALUE OF LAND FROM ACTUAL SALES.

With respect to the value of land, it would be difficult to give a report that would be truly reliable from actual sales: for instance, a settler, through misfortune or otherwise, over which, perhaps, he has no control, is obliged to sell; and the purchaser, knowing this, obtains the property for less than its actual value. On the other hand, a person arrives from some part of the United Kingdom, enquiring for land, with plenty of cash. Soon a person is found willing to sell; the price asked the stranger looks upon as merely an acknowledgement, and a bargain is made at once, and the property in all probability is purchased at more than its actual value. Another consideration should never be lost sight of with respect to the actual value of land, supposing all other things to be equal, which is locality. A farm situate within a mile or two of a good market is worth much more than a farm from twelve to twenty miles distant. Taking this view, just in proportion to distance, so is actual value. Sales for cash have been effected during the last year, twelve miles from our County Town, where one-tenth was cleared and fenced, but without buildings, for $12 per acre. Another sale, where one-half was cleared and fenced, but with log buildings erected, for $20 per acre. Wild land of the same quality, cash sale for $8 per acre. A Canada Company lot was taken up on lease at $10 per acre.

CULTIVATING THE SOIL.

Of the system of cultivating the soil little can be said. In fact there is no system; every man appears to do what to himself appears right; but almost invariably too much land is kept under the plough. If a less quantity was cultivated, and cultivated better, a much greater profit would be realized, take ten years together. The old adage will always stand good with respect to tilling the soil—"What is worth doing should always be done well." Just in proportion to the amount of labour expended, the farmer may expect his returns. We might state that from ten bushels of wheat per acre to forty bushels, have been realized during the past year. Average, say twenty-five bushels per acre; other grain in proportion. Of root crops the public will be well informed from our township reports, almost every farmer cultivates root crops now-a-days.

PRICE OF LABOUR.

Farm labourers are not so much in request in this riding as they are perhaps in many other parts of the Province, for the reason already assigned, viz., the majority of the settlers being of the humbler class, and the operations of the farm being carried on within themselves. Where we find this class in their purity, the spinning wheel is still part of the household furniture, if not the loom. Here the aged sire, with the youthful bairn, wear the home-spun garb; and there is no doubt here more true happiness is to be found than among any other class who go into the backwoods of Canada. Poor Richard's saying, which we were familiar with in our youthful days, would well apply to their history:

"They eat their own lamb, their chickens and ham;
And they shear their own fleece, and they wear it."

The usual price for farm labour is 50 cents per day, with board; and if by the month, from $10 to $12, with board. But by far the greater part of farm work is done by way of exchange. Carpenters' wages is usually $1, with board, and masons, $1.25. In the towns and villages mechanics' wages rule somewhat higher.

DAMAGE BY WHEAT FLY.

Very little damage, if any, has been done to the crops of grain in this riding by the wheat fly or midge; indeed, we were not aware that such depredators had made their appearance among us. But the Orillia Report states in one paragraph—"we have suffered no loss as yet from midge or wheat fly; but it has made its appearance in North Simcoe, at no great distance from us; and judging from its depredations in other sections, we have reason to fear such a visitor." In the Township reports of Oro, and Vespra, allusion is made to the severe frost of last summer and autumn, whereby the crops of Indian Corn and potatoes suffered extensively.

IMPROVEMENT IN CATTLE, SHEEP, &c.

We have already alluded to importations of first-class cattle to this Riding, direct from England, by several gentlemen many years ago; and now we have the pleasure to report subsequent purchases which have been made by different individuals, of first-class male stock from our Provincial Breeders. Indeed we flatter ourselves that if our stock could

be seen as a whole, we should compare very favorably with those who reside in more southern latitudes.

DRAINING NEGLECTED, AND WHY.

Draining the land has not been attended to in this riding as much as the health and prosperity of the occupier have required; and without doubt for the very palpable reason —want of funds. It must be patent to every body, that when a man goes back into the forest to clear a home for himself and family, every surplus dollar is required for the erection of a few buildings; and before he is aware, those he first erected require to be replaced by others, at an extra cost, thereby leaving no surplus for draining. But this is not all, for if the unfortunate settler on a lot of land happens to be of a subsequent importation to that of his neighbor, who purchased his land from the Government, he has to purchase his lot from the speculators, who have taken up every lot from the land agent at a nominal price of, say $1.50 or $1.75 per acre, by merely paying the first instalment, and who then sell their right for four times its actual value,

This system of land jobbing has been carcarried on to a ruinous extent in North Simcoe, and has been the means of crippling the poor settler for life; for every dollar must go to pay those who have been greedy of gain, instead of being expended in draining or otherwise improving property. Another fact which may not be generally known, and which is equally injurious to actual settlers is, that lands that are taken up by speculators, and are not deeded, and whereon no settler resides, cannot be assessed for taxes. Had the lands in North Simcoe been sold to none but actual settlers, by this time we might have been a flourishing community, for a healthier part of the Province cannot be found. While the actual result is, emigrants from the old country are going past us; and our sons who might have been an acquisition to our adopted country are moving to some far off place, seeking a home to themselves; and in many instances to the United States. We have stated that the speculators have crippled many poor but honest settlers so much that they cannot properly cultivate and drain their land; but we are pleased to be enabled to report that there are a few who are in better circumstances, and have commenced draining, and with very satisfactory results. Lands which have come under our observation, and which, when in a state of nature, were wet and cold, and actually useless, have been rendered extremely valuable by drainage. In the spring of the year when the farmer should be plowing such land, and otherwise preparing the soil for seed, the water prevented the teams from walking over it, and this state of things was obliged to be submitted to until the water was partially evaporated by the sun—the subsoil being of a hard nature always prevented it sinking. While in this state seeding was late; and harvesting was late; ten to twelve bushels of wheat, per acre, was considered a tolerably good crop, and to think of planting potatos, Swedish Turnips, or any other roots, would be considered the height of folly. But when drained, that portion which before was worthless for roots now yielded, in 1858, over 300 bushels of potatos per acre; and in 1859, nearly, if not quite 40 bushels of wheat per acre, and of superior quality. We hesitate not to state that there are thousands of acres of land in North Simcoe, which, if properly drained, could with ease be made to yield four times the quantity it produces at present, but the occupiers, for reasons already stated, are too crippled to attempt it.

IMPLEMENTS.

North Simcoe may be considered in the rear with respect to improved implements; mowers and reapers are not numerous, in fact they are almost useless until the stumps and stones are removed, and the surface of the soil levelled. The Horse-rake cannot be said to work properly on the virgin soil; and in a vast number of instances the farms are too small to require implements similar to those already mentioned; and in others, until a better system of cultivation is adopted, the returns will not warrant the outlay.

HORTICULTURE.

In horticulture we cannot report very favorably. The peach and more delicate fruit trees do not thrive here, they may live through some of our winters, but cannot be relied upon. Even apple-trees brought from the Nurseries have proved almost a failure, nevertheless we believe we are not singular in this case. Although much trouble has been taken and large sums of money expended, yet we have not met with encouraging success. But this privation is now in a great measure overcome by the construction of the Northern Railroad. Apples, the growth of

our neighbors across the line, are now sold by the barrel or otherwise, in our market in Barrie; and by the same means of transit we can supply them with lumber, &c., the growth of our Canadian Forest.

TOWNSHIP BRANCHES.

NOTTAWASAGA.—Sixty eight members; amount of subscriptions, $103; balance from 1858, $34.09; share of public grant, $50.80; total received, $187.89. Paid in premiums, $112; expenses, $33.10; balance in hands of Treasurer, $42.79.

ORILLIA.—Twenty five members; subscriptions, $134; balance from previous year, $30.12; government grant, $82.90; total received, $247.02. Paid for clover seed, $53.72; paid for keep of bull owned by Society, $42.55; copies of *Agriculturist*, $13; paid for seed wheat, and charges on do., $91.50; expenses, $22.45; balance in hand $23.80.

Extract from Report.

We have pleasure in stating that root crops are more extensively cultivated than formerly, and especially this season. The backwardness of the spring and appearance of a failure in the hay crop caused many to sow more than their ordinary quantity of Swedish Turnips, which have generally done well, and will in some measure meet the deficiency of the hay crop.

Fall Wheat is not sown to any extent in this locality, being liable either to be winter-killed or injured by rust. This year however, the crop has been an average one, and quality good.

Spring Wheat has been a full average crop, quality excellent, yield varying from 15 to 30 bushels per acre, according to quality of soil and state of cultivation. We have suffered no loss as yet from midge or wheat fly, but it has made its appearance in North Simcoe, at no great distance from us, and judging from its depredations in other sections we have reason to dread such a visitor.

Peas and oats were both a fair crop, some early oats suffered from the dry weather in the early part of summer, but on the whole may be considered an average crop, quality good.

Indian Corn, which generally does well here, has this year in general proved a complete failure, being injured by frost both in spring and fall.

Potatos—a considerable breadth of ground was under this crop, which had a fine appearance and gave promise of an abundant return, but the severe early autumnal frosts reduced the probable amount at least one third.

ORO.—Forty-three members; subscriptions, $142.45; balance from 1858, $45.35; share of public grant, $83.72; entries, &c, $15.69; total received, $287.21. Paid premiums at show and plowing match, $144.75; paid for clover seed, $74.30; copies *Agriculturist*, $20; incidental expenses, $33.01; balance in Treasurer's hands, $15.15.

VESPRA.—Thirty-eight members, subcriptions, $109.50; balance from previous year, $46.01; share of public grant, $70.56; total received, $226.07. Paid in premiums, $110.25; paid for clover seed, $79.52; copies *Agriculturist*, $12.50; incidental expenses, $28.09; total expenditure, $230.36; balance due Treasurer, $4.29.

Extracts from Report.

The soil of this township, (a sandy loam) generally speaking, not being of the best, though yielding fair average crops as long as the surface vegetable mould lasts, which is only for a very few years, requires careful tillage to keep the crops up to the mark. Experience has taught that sowing with grain year after year will not answer. To keep the soil productive a regular rotation of crops must be adopted, root crops and clovering cannot be dispensed with, and it is imperitively necessary that the most should be made out out of the barn-yard by way of manure; too much neglect is apparent in this respect. The farmer appears to make the most of every thing to supply his present necessities, takes to markt his hay, and even his straw, half starves his cattle, robs his farm and cosequently himself. So long as this continues the yield of our farms will necessarily decrease. There is a great necessity for improvement in the stock farming of this township, a majority of the farmers seem to content themselves with the old state of things, and, with few exceptions, make no effort to improve their stock, though the means for so doing are placed within their reach, for, as might be seen at our exhibition, we have some excellent thorough bred male animals in the townships, and the farmers have only themselves to blame for having stock which is neither fit for the dairy or the butcher. We are of opinion that it would conduce materially to the interests of the

farmer of this vicinity if he would turn his attention more to the raising and keeping of sheep as farm stock, than which there is no kind of animal more profitable, whether considered in a pecuniary point of view, or as a fertilizer of the farm.

The crops generally speaking, of last year, with the exception of hay, were good. As near as your Directors can ascertain, the average yield per acre for the township was as follows: Spring wheat 20, peas 23, and oats 30 bushels. What little fall wheat was grown, suffered greatly by the frost in June. The root crops yielded abundantly; there is no doubt but a large surplus produce was raised in the township, which has been disposed of at fair remunerating prices.

SOUTH SIMCOE.

County Society.—One hundred and thirty five members; subscriptions, $135; balance from previous year, $63.01; deposited by Township Branches, $300; government grant, $479.98; entry fees, &c, $32.93; total received, $1011.92. Paid Townships Branches, $619.98; paid premiums, $289.85; sundries, $30; balance in Treasurer's hands, $72.09.

Extracts from Report.

This District, taking it altogether, is well adapted and favorably situated for agricultural purposes. It is about forty miles north of the City of Toronto, having the macadamized road, Yonge Street, to within three miles of the county, it also has the Northern Railroad of Canada entering at nearly its south eastern limits (through the incorporated Village of Bradford, which is the Market Town) and passing north along its eastern border through the Townships of West Gwillimbury and Innisfil.

SOIL, &C.

The general character of the soil is a strong loamy clay, and well adapted for the growth of all kinds of white and green crops, particularly fall and spring wheat, of which the average yield the last season of the former was 25 bushels, and of the latter 30 bush. per acre. There are some swamps or marshes to be met with here and there through the county, most of which supply quantities of cedar that is considered almost indispensible for fencing purposes. The face of the county is in general sloping, or what is called by some rolling.

VALUE OF LAND.

It is difficult to give a correct idea of the value of farming land in a report of this kind, the prices vary so much both with circumstances and situations. Nearly every farm in the riding, except what is under swamp, is in a state of improvement, some of them half cleared, and others three parts cleared and free from stumps. Some farms have been sold since the depression in prices, or the land fever as it was called, for from $60 to $80 per acre, but for farms say one-half cleared, with comfortable buildings, the average price would be about $40 per acre.

CROPS, &C.

The quantity of green crops now grown is much greater than formerly, and an increased interest is taken in them, which we attribute in part to the attention of the farmers being directed to their importance as well as offering premiums by this society for the best crop of Swedish Turnips to be judged on the ground as they grow. The only barrier we know to their growth is the destruction of the young plant by the Black Fly, for which we are not aware of any remedy. All kinds of green crops did well last season.

Potatos in a few instances which were planted on low or wet ground, showed some symptoms of the old epidemic or rot, but not to any alarming extent. Carrots were by some farmers sown extensively, and yielded largely.

HORSES.

There are some very superior heavy team horses, but we cannot say so much in favor of the carriage or saddle horses, which is to be regretted the more on account of the fame or character this riding had some years since for its valuable roadsters. The average price for good horses at present is about $100 each and the supply is rather greater than the demand.

CATTLE.

In cattle there is quite a marked improvement to be seen at each of four succeeding annual exhibitions. The good effects of some Durham Bulls imported into the riding some years ago, is now manifesting itself. Galloway cattle are also being introduced, and by some are sought after, and thought to be well adapted to this Canadian climate. The feeding or fattening of cattle, with the increase and growth of green crops, is becoming much more general, each good farmer

usually feeding three or four beasts every winter. Some young cattle, such as 3 or 4 year old steers or heifers, after three months feeding, have been sold for $65.00 each,which before being fed could have been bought for $35.00 a head, leaving a profit of $30.00 each, less the expenses of raising turnips, &c. The subjoined table will pretty nearly show the cost and profit of feeding four head of cattle, which were sold in January last.

To 4 head of cattle, $35,00.....	$140 00
" Preparing ground for raising 2 acres turnips,.....	8 00
" Seed and sowing.....	6 00
" 10 doz. sheaves oats, 25c.....	2 50
" Balance.....	103 50
	$270 00
By amount received for 4 head of cattle.....	$260 00
	$260 00
By balance	$103 50

We do not take into consideration the value of the straw, or the trouble of attending to them, for they are more than doubly paid by the additional quantity and quality of the manure.

Dairy Husbandry is not very extensively followed, we suppose from and on account of the scarcity of pasturage, every arable acre being put under crop, the cows being obliged to pick through the bush until the crops are harvested, after which they have abundance of feed; however each farmer keeps as many as supply his own household, as well as having a few firkins of butter to dispose of in the fall.

SHEEP.

An increased interest is taken in sheep, and we are of opinion no stock pays better, or shows the benefit of the cross with the improved breeds more quickly. The kinds most in favor here are the Leicesters first, Cotswolds next. Some fat sheep have been sold in this place last winter at $12,00 each, weighing when dressed 132 lbs., but these were much beyond mediocrity, in fact might be said to be the pick of the county; the average price for fat sheep might be quoted at $5,00.

PIGS.

There is not yet enough of interest taken in raising good breeds of pigs, and we must say there is great room for improvement. A great number are annuallyraised in the county, the greater part of which have been sold on foot the last two or three years to Americans at the rate of about $4.50 per cwt. gross, which the farmers consider pays better than fattening them, in fact that this does not remunerate them for peas, &c. which they consume, and the trouble of attending to them.

FLAX.

In many parts of the county flax is sown on a small scale for the value of the seed. It grows and yields well, and your Directors are of opinion that their soil and climate is well adapted for its cultivation, and have no doubt that if there were a market or manufactory for the raw material it would soon be extensively grown.

HAY.

This crop was very deficient last season, and as a good deal of interest appears now to be taken in the growth of Hungarian Grass or hay; we give an extract from the address of our President, delivered at the agricultural dinner last fall touching its cultivation. He said: "As far as I can learn, the hay crop may be considered a failure through most parts of Canada as well as some parts of the United States, and therefore I think it my duty to direct your attention to this subject, and give you the result of what experience I gained this season relative to a new kind of hay, that is, Hungarian Grass, Honey Blade, American Millet, for by these different names it is called, some asserting that they are different kinds and that some are superior to others. Be this as it may, they all belong to one species or family, and as far as I have seen they are all equally good. The first notice of it I saw last winter in some of the United States Agricultural Journals, and from the praise there bestowed upon it, made up my mind to give it a trial upon Canadian soil. I was fortunate enough to find some seed at Mr. Simmers, seed merchant, Toronto, and sowed it on a piece of rich ground on which there were turnips the previous year, manured with Peruvian Guano and stable manure in the last week of April (being at that time ignorant of the proper time of sowing), which was a month at least too soon, for although it came up beautifully, and grew luxuriantly, the late frosts which came about the first of June almost completely killed it, so I plowed up the ground for

turnips, leaving a small portion to see if it would recover, which some of it did, and grew me enough of seed for next year. On the first week of June I prepared and sowed another piece of land with seed, at the rate of about one bushel to three acres; this came up quickly and grew rapidly, and about the middle of August, or ten weeks from the time of sowing, I cut it, and it yielded at the rate of six tons of 2000 lbs. the acre, of the very best description of hay. I say the very best, for it is both nutritious, clean, free from dust and all other impurities, and it is less subject to injury by rain or bad weather. When it first makes its appearance it looks very much like fox tail grass, after this the plants grow thick and strong not unlike Indian Corn, and ultimately it spins out and again resembles giant fox tail in appearance. Here is a fair specimen of the hay, also of the seed which I grew in the way described. You see the hay averages about 3½ feet in length, with a large head containing almost a handful of seed, and from the appearance of the head you will not be surprised to hear that it produces from 25 to 30 bushels of seed to the acre, and which weighs from 45 to 50 lbs. per bush, and I need hardly tell you that horses are particularly fond of both hay and seed. Now I would recommend the Officers and Directors of this Society to try it next spring, to keep an account of the time of sowing and cutting, also the quantity of seed sown per acre, &c., and when we meet again we will be better able to judge of its merits and adaptation to Canadian soil and climate."

HORTICULTURE.

This County is not very far advanced in the way of Horticulture. Apple and other hardy fruit trees heretofore have done well, and been very productive; but of late years, the young trees (particularly the apple) die off in large numbers, some say on account of the ravages of the bark louse, others say theirs have died off without any appearance of this insect upon them. The apple crop the last season may be said to have been a total failure, which we attribute to the unusually late and severe frosts.

LABOURERS' WAGES, ETC.

Labourers, as also male and female servants, are rather scarce, and generally enquired after; daily labourers receive 50c. per day with, or 75c. without board, and about $10 per month is the average wages for farm hands, and from three to four dollars per month for female servants. Tradesmen are not much employed by the day, they prefer working by the job or piece; the average wages for all the trades is about $1.50 per day, when they are employed in that way.

IMPLEMENTS.

We are well provided in the way of agricultural implements; reapers and mowers are in general use, and are of great advantage to the farmers, doing the work quickly and efficiently at that season of the year when labourers are scarce and much sought after. Straw or chaff cutters are in great demand this season, in consequence of the scarcity of hay. Subsoil ploughs have not as yet come into general use, though we feel assured much benefit would arise from them on many of the old cleared farms in this County, with stiff clay soil and subsoil, where the surface lime has been pretty well exhausted by repeated croppings of wheat.

DRAINING.

In this branch of agricultural improvement there is not much improvement as yet made. Most farms certainly have some drains cut through them in the wettest places—some of them open drains, others covered; the materials used to conduct the water through the latter are principally stones or rails. Small stones make a very efficient and permanent drain, thrown loosely into the drain to the depth of eight or ten inches, and protected in the usual way, with straw, brush or sod. There are as yet no pipes or tiles manufactured in this county, though they are made on its borders, in the township of King.

WEEDS.

On some, in fact we might say many, farms in this Riding, noxious weeds of different kinds are to be seen—such as pigeon weed, wild mustard, and worst of all, Canada thistle, and too much attention cannot be paid to their destruction or eradication. The two former can be got rid of by hand pulling, and by being careful in getting and sowing pure clean seed—not so with the Canada thistle. Many and various ways have been tried

to rid the farm of it, with only partial success, but we are not aware that any scientific principles have been adopted with this object. Your Directors would recommend a premium being offered by the Board of Agriculture for the best essay upon their destruction or eradication, to be tested by actual experiment.

FENCES.

The old serpentine or rail and rider fence is the one still in general use, and as yet appears to be most suitable to the country and to the wants of the farmer; but in many places, particularly along road sides, are straight fences of cedar posts and boards. There are also some picket fences made with split cedar sunk into the ground, or with sawed slats of pine nailed upon scantling and cedar posts. No live fences as yet have been successfully cultivated. The English white thorn has been tried without any marked success. They sometimes grow well and then die off. If some hardy native shrub or plant suitable could be found, we have no doubt it would be of great advantage, affording shelter for cattle, &c., as well as protection to the crops.

TOWNSHIP BRANCHES.

Essa.—Forty-six members; subscriptions, $42; balance from previous account, $33.29; share of public grant, $42.66; total, $117.95. Paid in premiums, $73.50; expenses, $16.71; balance in Treasurer's hands, $27.74.

West Gwillimbury.—Report very imperfect; 38 members reported.

Innisfil.—Sixty-one members; subscription, $63; balance from previous year, $58.68; Government grant, $60.80; total received, $182.48. Paid in premiums, $150; expenses, $13.95; balance in hands of Treasurer, $18.53.

Mulmur.—Thirty-six members; amount of subscriptions, $50.

Tecumseth.—Forty-four members; subscriptions, $77; balance from 1858, $14.74; share of public grant, $82,13: total receipts, $173,87. Paid in premiums, $148 52c.; expenses, $16.82; balance in hand, $8.53.

STORMONT.

County Society.—Amount of subscriptions, $48; balance from previous year, $29.16; deposited by township branches, $210; Government grant, $479.98; total rec'd, $767.14. Paid township branches, $498; paid for clover seed, $16; expenses and sundries, $76.63; balance in Treasurer's hands, $176.51.

TOWNSHIP BRANCHES.

Cornwall.—Amount of subscriptions, $62; balance from 1858, $259.81; Government grant, $86.50; received for a ram sold, $5; total receipts, $413.31. Paid for copies *Agriculturist*, $20; paid in premiums, 104; paid for young bulls and ram lambs, and freight, &c., $305.30; incidental expenses, $14.50; total expenditure, $443.80; balance due Treasurer, $30.49.

Finch.—Forty members; amount subscribed, $41; no further report.

Osnabruck.—Amount of subscriptions, $110; balance from 1858, $7.43; Government grant, 148; total received, $265.43. Paid in premiums, $237.16; expenses, $25.50; balance remaining in hand, $2.77.

Roxborough.—Forty-two members; subscriptions, $49; share of public grant, $53.50; sundries, 87c.; total received, $103.37. Paid in premiums, 75.25; expenses and sundries, $9.50; balance in hand, $103.37.

VICTORIA.

County Society.—Three hundred and sixty-five members; subscriptions, $354; balance from previous year, $700; deposited by township societies, $267.80; Government grant, $479.98; donations and sundries, $105.58; total received, $1907.36. Paid for seeds, $389.30; paid township branches, $554.80; premiums, $150.25; expenses, 33.17; sundry payments (objects not stated), $637.83; balance in Treasurer's hands, 142.01.

Extracts from Report.

This County is divided into 19 Townships, viz.: Emily, Ops, Mariposa, Eldon, Fenelon, Verulam, Laxton, Carden, Somerville, Bexley, Lutterworth, Anson, Macaulay, Dalton, Ryde, Digby Draper, Oakley, and Hindon. The inhabitants are principally emigrants from Great Britain and Ireland, and are almost exclusively engaged in agriculture. The soil of the first five mentioned townships is a heavy clay, lying on a bed of limestone gravel; that of the remaining 14

townships, which lie in the more northern part of the County, is of a more loamy and gravelly nature. It is observed, that the quality of the wheat grown is gradually inproving, and it is suggested, that this improvement arises through the steady increase in the quantity of the limestone that is brought to the surface by various means. A peculiarity of the geological formation of the County should be brought under especial notice. In the townships of Mariposa and Ops, the limestone is of the hardest nature known, but on exposure to the atmosphere, from one to three years, it crumbles first into pieces and then into a dust resembling plaster.

The County is favoured with excellent water communications. The Scugog Lake empties itself into the Scugog River, at the south part of the County, runs past the Town of Lindsay, falls into Sturgeon Lake, and leaves the County on its course by the Rivers Otonabee and Trent to Lake Ontario, at Bobcaygeon, at which point a Government Road, 120 miles in length, leading to Lake Nipissing, is in progress of formation. This road is already graded for 30 miles, and is rapidly being taken up by settlers, and considerable advantages are anticipated from the opening up of this County. A fine chain of lakes, viz.: Gull, Balsam, and Cameron Lakes, intersects this water communication from the north-west, uniting with Sturgeon Lake at Fenelon Falls. These waters are at present navigated within the boundaries of the County for fully 36 miles, by four steamboats and other craft, and this navigation can be beneficially extended by a small outlay for Locks at Fenelon Falls and Balsam Rapids. These lakes are now the scenes of considerable lumber operations; during the year white pine, commanding the highest price in the Quebec market, has been cut on their banks and rafted through them, en route to the seaboard. It is, however, a source of regret, that so large a quantity of timber should be carried out of the County, in an unmanufactured state.

The facilities for forwarding the produce of the County have been greatly increased by the making of the Port Hope and Lindsay Railway, which enters the County at the south-west corner of Emily, and has its terminus at Lindsay. The railway presents to immigrants and tourists a daily facility for reaching the back country, and it is satisfactory to state, that its receipts are increasing.

The County contains 5 mills for gristing, driven by water, and one by steam power; one oatmeal mill; 10 saw mills, driven by water, and two by steam power; two carding, fulling, and cloth dressing machines; two shingle manufactories, and three foundries and machine shops. By the best estimate that can be arrived at, there were 519,500 bushels of wheat grown in the County during the year, the quality of which is represented by purchasers to be worth fully five cents more per bushel than the wheat of 1858. The fall wheat raised was principally of the Soule kind, and has yielded well; the prize wheat at the County Show weighed 64 lbs. per bushel. The spring wheat, which is most extensively cultivated, is generally the Fife or Scotch wheat, which, in this County, has also yielded well—the prize wheat weighing 62 lbs. a bushel. Wheat sown previous to the 12th of May was liable to the ravages of the midge, but if sown after that time, was almost entirely free; in fact, this district did not suffer so much from this insect as in the previous years; it was observed that a small spider destroyed this insect early in the morning, and to this cause and to a sharp frost in June, our comparative immunity is ascribed. But little barley is raised; peas and oats were extensively cultivated, and, on an average, 20 bus. of the former and 25 of the latter, per acre, were raised. In Mariposa and some parts of Ops, peas averaged 30 bushels an acre; potatoes were extensively cultivated, and averaged 100 bushels to the acre; maple sugar was largely manufactured, and on no previous year has the sap been more prolific. The hay crop was almost a total failure, but in instances where plaster was used, beneficial effects resulted; root crops were an average. The butter exhibited at the County Show did great credit to the dairy women, and our cheese, although not so good as could be desired, is gradually improving in quality. There has been a steady and uniform market for wheat,

and all descriptions of produce, in Lindsay, at prices which almost approximate with those of Toronto.

In agricultural implements, it is to be regretted, that the County is in the back ground; but since the Railway has been completed, some of the most modern improvements have been introduced.

The breed of horses may be described as of the old native stock, and the Directors, feeling the necessity of improvement, purchased a thorough bred horse, whose sire stood at the Royal Paddocks, at Hampton Court, in England; but unfortunately, though well cared for on its passage by an experienced groom and the officers of the Montreal Steam Ship Company, it died on its third day out at sea. A cross between a thorough bred horse and the Clyde breed, is considered most suitable for this district. The breed of cattle is altogether of the native sort; the farmers of Mariposa have made some few attempts at improvement in this respect. The breed recommended as most suitable is the Durham, if in the hands of careful and attentive farmers; but, in ordinary cases, Devons are preferable. More advance has been made in sheep—by crossing the breed already existing with Leicester rams, both the quantity of the wool and the quantity and quality of the mutton brought to market have improved. Of pigs, all the improved breeds have been introduced with success.

There has been but little interchange in landed property, sufficient, however, to indicate, that with moderate improvements it is worth $40 per acre—the average rental $2½ per acre. But very few attempts have hitherto been made at draining, and, where effected, it has been done with stone and cedar—tiles not being as yet manufactured in the County. The average rate of wages for an agricultural labourer, with board, is $120 per annum; per diem, commonly from 50 to 60 cents; in haymaking, 75 to 80 cents, and in harvest, $1—these rates indicating a decline of one-fourth.

With respect to the Horticulture of the County, the Directors regret they have but little favorable to report. Its northern position, and comparatively late settlement, prevent its competing in this respect with many other counties, the attention of its inhabitants being naturally more directed to agriculture; but the season of 1859, from its late spring and early autumnal frosts, must be chronicled as a peculiarly unfavourable one to the gardener.

Amongst the undeveloped resources of this County must be enumerated as existing in its northern parts—black and white marble, plumbago of the finest quality, copperas, iron, lead, and silver ore. These articles could be transported at a comparatively small cost to the marts of commerce; and it is believed, that if more publicity was given to these facts, that the attention of parties engaged in and conversant with mining, might be directed to them, so as to turn them to profitable account.

TOWNSHIP BRANCHES.

Fenelon and Verulam.—Amount of subscriptions, $73; balance from 1858, $43.27; received from County Society, deposit and public grant of 1858, $115; share of public grant, 1859, $77.60; total received, $308.87. Paid for seeds, gypsum, breeding stock, expenses, &c., $299; balance in Treasurer's hands, $9.87.

Mariposa.—One hundred and forty-four members; amount of subscriptions, $144; Government grant, $154.40; amount paid in premiums, $81. Report imperfect.

Ops.—Amount of subscriptions, $51; grant, $54.80. Funds expended in purchasing clover seed, turnip seed, premiums at show, ploughing match, &c. Report defective.

NORTH WATERLOO.

County Society.—One hundred and fifty-seven members; amount of subscriptions, $196.25; balance from previous year, $72.84; deposited by township branches, $204; grants from Township Councils, &c., $80; Government grant, $479.98; total receipts, $1033.07. Paid township branches, $404; paid in premiums, $521; expenses, &c., $120.98; total expended, $1045.98; balance due Treasurer, $12.91.

TOWNSHIP BRANCHES.

Wellesley.—Eighty members; amount of subscriptions, $117.50; Government grant, $100; total received, $217.50. Paid in premiums, $178.50; expenses, &c., $39.

Woolwich.—One hundred and four members; subscriptions, $122; Government grant, $100; receipts at show, $8; total received, $230. Paid in premiums, $163.53; expenses, $50.13; balance in hands of Treasurer, $15.34.

SOUTH WATERLOO.

County Society.—Two hundred and forty-five members ; amount of subscriptions, $405; balance from previous year, $238.32; Government grant, $479.98; receipts at show and sundries, $162.87; total received, $1286.17. Paid in premiums, $773.25; copies *Agriculturist*, $25; erecting floral hal , preparing grounds, printing, and other general expenses, $352.74; balance in Treasurer's hands, $135.18. There are no township branches in this division.

Extracts from Report.

It is satisfactory to observe the great improvement that has taken place in the breeds of all kinds of stock during the past four or five years, and more particularly in Leicester sheep; in fact, the not-thoroughbreds, as shewn in this Riding, in some counties would pass muster for pure.

There appears to be more attention paid to the breeding of pigs; still, however, leaving room for more general improvement, particularly when the fact is taken into consideration that a farmer on one half the food may raise almost double the quantity of pork.

The roots exhibited could not be surpassed in any part of the Province. The crops of potatoes and turnips throughout the Riding have been most excellent; from the report of the judges on "the best acre of turnips," in some instances the yield of the latter root was enormous.

The fall wheat crop by no means fulfilled the promise of the early part of the season—never was there prospect of a fairer harvest; but the untimely frost in June rendered the crop in some cases entirely worthless, and in most instances injured it more or less.

The hay crop, owing to a long continued series of dry weather, has been a complete failure, and were it not for the large yield and excellent quality of straw, many farmers would have considerable difficulty in wintering their cattle.

Oats and peas, in the Township of North Dumfries, owing to the same cause, are but an indifferent crop; but in the Township of Wilmot they are above the average.

The introduction of the gang plough and cultivator has been attended with the most benefical results, and appears to be very generally adopted. The reaping and mowing machines, also manufactured by our own enterprising mechanics, have proved themselves most valuable auxiliaries to our farmers, making them in a measure independent of manual labour; this, in a county at such times so scarce of labouring hands, is a great boon.

It is a matter for very serious consideration for our farming community, in the face of so many failures in the wheat and other grains, whether it is advisable to depend so much on these crops for a profitable investment, or whether it would not be much more to their advantage to go more extensively into the breeding and fatting of stock? The Americans now look to Canada, particularly this portion of it, for a proportion of their supply of beef and mutton for the New York market. With our soil so well adapted for the culture of the turnip and mangel wurzel, it is a great question whether it would not pay better in the meantime, and be a decided advantage to their land in the future.

The breadth of turnips now grown in the Riding is very large, in one instance reaching as high as sixteen acres—three and four being quite a common average. Your Committee are of opinion that the premiums offered by the Society, for the best acre of turnips, will have a good effect, as tending to improve the system of cultivation.

Your Board view with much pleasure the increase of our home manufactures, as in that lies one of the great sources of wealth of a country, bringing a good market for our produce to our very doors, and checking the great efflux of capital. It is a matter of great gratification that the woollen manufactures of Galt and Preston stand second to none in the Province.

The farmers of this Riding, and more particularly the Township of North Dumfries, have much to be thankful for, and

also to be proud of. Coming, as they did, into one of the most rugged and intractable parts of Canada, they have converted it, by untiring industry and assisted by a kind Providence, into one of the most fertile and flourishing sections of the Province; and they can now sit down, surrounded with smiling plenty, to enjoy a good old age, the results of a hard working, energetic youth.

Miscellaneous.

Grease an Antidote for Arsenic.—M. Blondlot, of Nancy, (France), has lately called attention to a very curious toxicological fact, namely, that greasy matters have the power of diminishing considerably the solubility of arsenious acid either in pure water or in acid and alkaline liquors. Thus, in contact with grease, the poisonous properties of arsenic are very much decreased, and at the same time it becomes more difficult to render its presence evident by chemical reactions. A very slight quantity of greasy matter, according to M. Blondlott's experiments, reduces the solubility of arsenious acid to 1 15th or 1-20th of what it is when in a pure state. This explains why arsenic, taken in the form of powder, remains sometimes for a considerable interval in the body without producing injury; it explains also how it is that in cases of poisoning by arsenic, this substance has not been readily detected in such portions of the body or the aliments which contain much grease. It seems to teach us, also, that cream, for instance, is an excellent antidote for arsenious acid. Morgagni tells us, in his writings, that, in his time, the Italian boatmen used to astonish the bystanders by swallowing, without hurt, large pinches of arsenious acid, having taken the precaution beforehand of drinking large quantities of milk or eating some greasy matter. As soon as the public had retired they got rid of the poison by vomiting.—*London Photographic News.*

Pin-money.—Towards the close of the fifteenth century, an epoch that marks a transition style in the dress of ladies, pins were looked upon with great favor as New-Year's gifts. They displaced the old wooden skewer, which no effort of skill, no burnishing or embellishment could convert into a sightly appendage. Pins, in that simple age of the world, were luxuries of high price, and the gift was frequently compounded for in money—an allowance that became so necessary to the wants of ladies of quality, that it resolved itself at last into a regular stipend, very properly called "pin-money."

A Centenarian.—There is at present residing at the village of St. Mary Cray a man named Joseph Knee, who was born on Christmas-day, 1758, christened on Christmas-day, 1759, and married on Christmas-day, 1782. He is a farm labourer. His wife lived with him fifty years, and he had three sons and four daughters, of whom only three of the latter are now living. He was born in the parish of Sean, in Wilts, and came to St. Mary Cray at the age of 90, to reside with his son-in-law, Mr. Reeves. The old man is in possession of all his faculties, walks about daily, and takes his glass with perfect ease.—*Maidstone Journal.*

Planted by Nature.—Some seeds when ripe, are provided with hooks made to cach hold of passing animals, which, after a time, get rid of them by rolling on the ground. Those seeds which are surrounded by a succulent pulp, and are swallowed by birds and quadrupeds, are generally favorably consigned to the earth. Most seeds pass uninjured through the stomach and intestines of all animals, with the exception of gallinaceons fowls. Currant seeds, after having been eaten by man, can germinate. Foxes sow the seeds of the cranberry (vaccinum) after eating its red berries. Apple and pear trees are often found in ditches and under hedges, proceeding, it is said, from fruit which has been devoured by peasants. Farmers are often astonished when, after having, as they think, perfetly prepared their fields, and sown excellent corn, on reaping they find some places covered only with useless oats. In other cases, mammifers and birds devour only a portion of seeds, while the rest fall and become productive. When the squirrel shakes the cone of the pine-tree to obtain the seeds, a great number fall to the ground and are lost to him. The inhabitants of Iceland call a particular sort of nut "rat's nut," from the circumstance that the rats gather them in great numbers, and hide them in the ground. But as the rats are very often killed by one or other of their numerous enemies, the nuts are left to germinate. Seeds falling into worm holes are sure to germinate, as well as seeds which drop into the subterraneous passages made by moles to ensnare worms and insects. The hog, by turning up the earth as with a plowshare, prepares it for the reception of seeds. The hedgehog passes his life in doing the same service.—*Dickens' All the Year Round.*

Game in the London Market.—The quantities of game and wild birds consigned to some of the largo London salesmen almost exceed belief. After a few successful *battues* in the Highlands, it is not at all unusual for one firm to receive 5,000 head of game, and as many as 20,000 to 30,000 larks are often sent up to market together. Ostend sends annually 600,000 rabbits, which are reared for the purpose in the neighboring sand-dunes, in addition to those which are caught in our own areas, and whose love-cries make night hideous. We are indebt-

ed to Ireland for flocks of plover, and quails are brought from Egypt and the South of Europe. Some 17,000 quails on one occasion descended upon London *via* Liverpool, whither they had been brought from the Roman Campagna. Of the 2,000,000 fowls that every year flank the boiled tongues on our London tables, by far the greater number are drawn from the counties of Surrey and Sussex, where the Dorking breed is in favor. Ireland also sends much poultry. No less than 1,400 tons of cilickens, geese, and ducks are brought to town annually by the Great Western Railway, most of which are from the neighborhood of Cork and Waterford, whence they are shipped to Bristol. The bulk of the geese, ducks, and turkeys, comes from Norfolk, Cambridge, Essex, and Suffolk—four fat counties which do much to supply the London commissariat, the Eastern Counties Railway alone having brought thence in one year 22,462 tons of fish, flesh, fowl, and good herrings. The estimate of all the poulterers' stock which is annually consumed here, including hares and rabbits, amounts to some unknown figure of between 6,000,000 and 10,000,000 items.—*Times.*

Low Diet.—In 1307, when the Archbishop of St. Andrews was a prisoner at Winchester, he was allowed 1s. per day for the maintenace of himself and servants, divided in the following proportions:—For the archbishop's own daily expense, 6d.: one man-servant to attend him 3d.: one boy ditto, 1½d. And the Queen of Robert Bruce, who was a prisoner in England in 1314, was allowed only 20s. a week for herself and household.

The Walrus.—The chase of the walrus is of great antiquity. Oether, the Norwegian, about the year 890, gave an account of it to Alfred the Great. "Having," he says, "made a voyage beyond Norway for the more commoditie of fishing horse-whales, which have in their teeth bones of great price and excellencie, whereof he brought some at his return to the king." In the present day the sea-horses range the coasts of Spitzbergen almost without molestation from the British. The whale-fishers rarely take half a dozen in a voyage. The Russians are their principal enemies, who, by means of the hunting parties, sent out to winter on the coast, capture a considerable numbor. The flesh of the walrus is found tolerably good by Europeans, and afford a variety amid the ordinary sea fare; and there are few of the sailors who do not prefer it to salt meat Among the Chinese, the tusks are employed for those curious uses to which they so wonderfally turn ivory, as it is said to surpass that of the elephant in hardness and permanent whiteness; and in most civilized nations it is extensively used for the invaluable purpose of giving teeth to the toothless.—*Lessons from the Geographical Distribution of Animals.*

Woman.—Great, indeed, is the task assigned to woman! Who can elevate its dignity? Not to make laws, not to lead armies, not to govern empires; but to form those by whom laws are made armies led, and empires governed; to guard, against the slightest taint of bodily infirmity, the frail, yet spotless creature whose moral no less than physical being, must be derived from here to inspire those principles, to inculcate those doctrines, to animate those sentiments which generations yet unborn, and nations yet uncivalized will learn to bless; to soften firmness into mercy, and chasten honor into refinement; to exalt generosity into virtue; by a soothing care to allay the anguish of the body, and the far worse anguish of the mind; by her tenderness to disarm passion; by her purity to triumph over sense; to cheer the scholar sinking under his toil; to console the statesman for the ingratitude of a mistaken people; to be compensation for friends that are perfidious—for happiness that has passed away. Such is her vocation. The couch of the tortured sufferer, the prison of the deserted friend, the cross of the rejected Saviour—these are theaters on which her greatest triumphs have been achieved. Such is her destiny: to visit the forsaken, to tend to the neglected when monarchs abandon, when counciliors betray, when justice prosecutes, when brethren and disciples flee, to remain unshaken and unchanged, and to exhibit in this lower world a type of that love, pure, constant and ineffable, which in another we are taught to believe the test of virtue.—*Blackwood's Magazine.*

Editorial Notices &c.

Death of Dr. Robb.

We learn with deep sorrow of the decease of Dr. Robb, the very able Secretary of the Board of Agriculture of New Brunswick. The Doctor was Professor of Chemistry and Natural History in King's College; and for many years distinguished himself as a zealous and enlightened promoter of scientific and practical agriculture. Much of the late improvement that has taken place in that important colony may fairly be attributed to the exertions of the late highly esteemed Professor, and the few enterprising men who, for many years, have been associated with him. His premature removal must be felt as a most serious calamity in our sister colony; and also as a heavy loss by the agricultural community throughout British America, and the neighboring States.

James G. Steuens, Esq., of Charlotte Co., has

been appointed Dr. Robb's successor as Secretary of the Board, and from the correspondence which we have had with him since his appointment, we have good reason for believing that he will do his part in sustaining efficiently the important interests entrusted to his care. We have to thank Mr. Stevens for a copy of the "First Annual Report of the Board of Agriculture of the Province of New Brunswick," in which we find some very able and interesting articles, some of them from the pen of the late Dr. Robb; and also a copy of the prize list of the Provincial Exhibition of New Brunswick, to be held at Sussex Vale on October 1st, 2nd, 3rd, and 4th next.

TORONTO HORTICULTURAL SOCIETY.

We have lying before us the Report of the Directors of this important Society for 1860; a few extracts from which cannot fail to be interesting to many of our readers. The Exhibitions of the Society were more than usually successful, and the land, the munificient gift of the President, the Hon. G. W. Allan, has already been converted, under the able superintendence of Mr. E.Taylor, landscape gardener, of this city, into a beautiful and tastefully arranged garden, highly creditable to the Society, and a great ornament to the city. It is to be regretted that, mainly owing to the unpropitious state of the weather, during the formal opening of the Garden by His Royal Highness the Prince of Wales, the receipts fell much short of the expenditure, and left the Society considerably in debt. Some extra effort it is hoped will soon be made for relieving the Society from this incumbrance.

The Report says :—

"The season of 1860 has been an eventful one in the history of your Society. It has witnessed the accomplishment of an undertaking which has not only engaged the earnest attention of the Directors during the past two years, but has excited much interest among all the members of the association.

"Despite the many difficulties and discouragements, the works commenced in 1859 in the grounds presented to the Society by the President, have been successfully completed, and on Tuesday, the 11th of September last, the Directors had the satisfaction of seeing their gardens opened for the first time for the admission of the public, and of holding in them, in conjunction with the Electoral Division Society, a grand united exhibition of flowers, fruits and vegetables.

"This auspicious event, so full of interest to the Society, was rendered doubly gratifying by the opportunity which was then afforded to its members of joining in their corporate capacity with other bodies on the occasion of the late visit of his Royal Highness the Prince of Wales, in testifying their respect and affection to the heir of the British Crown, and their loyalty and devotion to his Royal Mother.

During his stay in this city, his Royal Highness was graciously pleased to accede to the request of the society to be present at the opening of the gardens, and he accordingly conferred the distinguished honour on our body, of inaugurating the proceedings of the day by receiving and answering an address presented to him by the President and Directors on behalf of the society, and leaving at the same time a lasting memorial of his visit by planting a Canadian Maple in front of one of the prinicpal walks of the garden.

The season of 1860 has also been remarkable as one of extraordinary productiveness. Not only have the labours of the husbandman been blest by a kind Providence with the most plentiful returns, but the garden and the orchard have rivalled the farm in the abundance and excellence of their respective productions.

Tuesday, the 11th of September, was the day fixed upon for the public inauguration of the Garden by the Prince, and the Directors had done everything in their power to make the arrangements worthy of the august occasion. Nothing indeed seemed wanting but the sun's cheeriug rays, so essential to the perfection of a horticultural fete.

The following is the address presented to the Prince on that ever memorable occasion :—

To His Royal Highness, Albert Edward, Prince of Wales, &c., &c.

May it please Your Royal Highness,—

We, the Directors of the Toronto Horticultural Society, desire, on behalf of the Association, to express our grateful sense of the high honor conferred on the Society by the visit of your Royal Highness to our gardens.

In prosecuting the work of laying out these grounds, now for the first time to be opened to the public, the Society have been actuated by a desire to promote the interests of Horticulture and at the same time to prove a new source of healthful recreation, and rational enjoyment for their fellow citizens.

The encouragement which has always been accorded to undertakings of a similar nature in our fatherland, both by Her Majesty and the Prince Consort, have emboldened us to hope for the countenance and favor of your Royal Highness upon the present occasion, and we now, on behalf of the Horticultural Sooiety, most respectfully request that your Royal Highness will be graciously pleased to inaugurate these gardens, and at the same time to leave a lasting memorial of your visit, by placing in our grounds a Cana-

dian Maple, which may long continue a living monument, both to us and to our children, of the gratifying events of the day, as well as of the honor conferred upou our country by the visit of the Heir Apparent to the British Throne.

G. W. ALLAN,
President.

To which his Royal Highness was graciously pleased to make the following reply :

GENTLEMEN,—I shall have great pleasure in doing any thing which will tend to encourage amongst you a taste for the cultivation of gardens, such as may increase the comfort and enjoyment of the citizens of Toronto. I shall be content if the tree which I am about to plant, flourishes as your youthful city has already done.

FRESH CLOVER SEED FOR SALE.

250 BUSHELS OF GOOD CLEAN SEED Canadian growth.

Price on application and samples sent by mail or otherwise. The seed is put up in two bushel bags of the best quality, and can be forwarded with safety to any part of the country.

Descriptive catalogues of seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman, 350 Yonge Street.
Toronto, April 22, 1861.

SHORT HORNS.

FOR SALE—FIVE BULLS, all entered in American Herd Book. Prices, from 100 to 400 dollars Also, a few HEIFERS, at low prices. Apply to

T. L. HARISON, *Morley,*
St. Lawrence County, New-York,
or at the *Agriculturist* office, Toronto.

March 9, 1861. 6t.

FOR SALE.

A FEW pure bred Devon Bulls, Cows, Heifers, Calves, &c., of unquestionable pedigree.

GEO. Z. RYKERT,
St. Catharines, C. W.
April 10th, 1861. 3-t.

FRESH GARDEN, FIELD and FLOWER Seeds for Spring Sowing.

The Subscriber begs to inform his friends and the public that his stock of Fresh Seeds is now complete, and very extensive, embracing almost

EVERY VARIETY OF SEED

that is adapted to the country. The stock of Agricultural Seeds is large and well selected, and the vitality of each sort being fully tested, the genuineness of the seeds may be fully relied upon.

Merchants and Agriculturial Societies ordering Seeds in bulk will be supplied at wholesale prices. Complete assortments of garden seeds neatly put up in small papers, with directions for sowing, and sold by the box containing 150 papers for $5. Twenty packages of Flower Seeds, choice sorts, will be sent free by post to any part of the Province, to the address of any party remitting $1, free of postage, or 25 packages, postage unpaid.

The Subscriber wishing to give parties who reside at a distance an opportunity to test the qualities of his seeds, will on the receipt of $2, free of postage, send free to any Post Office in Canada, 25 full sized packages of VEGETABLE SEEDS, many of them containing an ounce of seed, and 12 papers of choice FLOWER SEEDS with descriptive catalogue and box included—the seeds to be of my own selection. None but the most useful and desirable varieties will be sent.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.
Toronto, April 22, 1861. 9—3t

SEEDS! SEEDS! SEEDS!

200 BUSHELS WHITE POLAND OATS; weighs 42 lbs. to the bushel.
100 bushels Hungarian Grass.
100 bushels imported Swede Turnip Seed.
200 bushels of Early and Late Potatoes, fine sorts for seed, with a full and general stock of all kinds of Seed for the Farm and Garden.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.
Toronto, April 20, 1861.

GARNET CHILI POTATO.

THE Subscriber has on hand upwards of a hundred bushels of this new and superior variety of potato to sell for seed.

ALEX. SHAW,
Oak Hill, Toronto.
April 15th, 1861.

SEEDS! SEEDS! SEEDS!

TORONTO SEED STORE,

Corner of Front Street and West Market Square.

THE Subscriber would beg to direct the attention of his friends, and the Public to his assortment of

Field, Garden, and Flower Seeds,

Comprising large quantities of *Turnips*, *Carrots*, *Mangel-wurzel*, *Cabbage*, *Onion*, *Parsnip*, and everything worthy of cultivation in this latitude. They are all of the best quality and procured from such sources as to warrant their genuineness.

The Sixth Annual Edition of his priced Catalogue

Of seeds, contains full directions for the treatment of various Seeds and Crops, together with much valuable information regarding this subject, and *may be had gratis on application.*

It forms a neat little pamphlet of 45 pages, and a perusal of it will show purchasers the advantage of procuring their supply of Seeds from responsible Seedsmen, instead of from parties having no knowledge whatever of the business.

The satisfaction so generally expressed by those with whom he has had the pleasure of dealing heretofore leads him to hope that he will continue to receive a large share of the Public patronage.

Orders per post or otherwise will receive prompt attention, and are are requested to be addressed to

J. A. S immers
Seedsman.

Toronto, April, 1861. 4-t.

FOR SALE.

A PURE bred young short horn Bull ; Sire an Dam imported in 1857, and *both* took First Prizes at the Provincial Show in Brantford the same year.

Address, R. R. Bown, Brantford.

N. B. Full blooded cow stock taken in exchange, if desired.

Brantford, April 8th, 1861. 4-t

BOARD OF AGRICULTURE.

THE Office of the Board of grAiculture is at the corner of Simcoe and King streets, Toronto, adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

Hugh C. Thomson,

Toronto, 1861. *Secretary.*

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, JUNE 16, 1861. No. 12.

The Provincial Exhibition.

In another part of this number of our Journal will be found the Rules and regulations, together with the list of Prizes offered, for the sixteenth Annual Provincial Agricultural and Industrial Exhibition of Upper Canada, to be held at the city of London in the last week of September next. It will be seen that the Prize list is similar in its main features to that of former years, competition being invited in the same classes of products, with a few items added. The aggregate amount offered in prizes is about $12,000, which is more than in any former year, except only last year, 1860, when special efforts were made to bring out a very extensive competition. This amount is exceedingly liberal and ought to encourage a spirited competition. It is greater we believe than that at any other exhibition, except possibly one or two, in any of the neighboring provinces or or states.

Although the amount of prizes is not quite so large as last year, yet some new features, which were introduced for the first time last year, and which added considerable interest to the exhibition, as for instance the prizes for herds of cattle, the prizes for the best animal of any age in a class, &c., have been retained, and will doubtless be again well contested. Prizes have also been offered for a machine for sinking drains and laying in tiles, and for a steam plough or cultivator in actual operation, both of which we have good reason to expect will be competed for, and will doutless prove a great source of attraction at the exhibition. Although no implement of the kind first named has yet been produced to work quite satisfactorily, industry and perseverance may yet succeed in overcoming the difficulties experienced and producing a machine which will effect a great saving of labor and expense in the execu tion of the important improvement of Land Drainage. The second implement mentioned has now got beyond the mere experimental stage, and is in actual use to a large extent in England, where land is ploughed and cultivated by it considerably cheaper and more advantageously than by the ordinary method. We have not yet seen anything of the kind in Canada, but we fully anticipate that we shall have an opportunity of doing so at our show at London this autumn.

Hon. Adam Fergusson, one of the first presidents of the Association, a member of the Board of Agriculture from its commencement, and whose name is familiarly associated with the progress of agriculture in this province in the minds of all its inhabitants, has very liberally offered some handsome special prizes, which will doubtless prove gratifying mementos to whoever may be the winners of them.

We should have alluded somewhat earlier, in these remarks, to the handsome prize of Sixty Dollars, given by His Royal Highness the Prince of Wales, which is derived from his princely donation of Two Hundred Pounds to the Association on the occasion of his visit last autumn, and will be continued annually, the object for which it is given being changed from year to

year as the Board may consider desirable. This prize will be one of the most coveted honours to be gained at the Show.

The Legislature did not deem it proper to accede to the petition of the Board of Agriculture, during last session of Parliament, to grant a sum of money from the public funds, in aid of the proper representation of Canada at the Grea World's Exhibition at London, England, in 1862. The Board may possibly be able to make some preparation for that event, in connection with our approaching Exhibition, and it is partly with this object that the County Societies are requested to send to it specimens of fall wheat from every county in the province. At any rate, if this invitation is freely responded to by the Societies, a collection will be obtained, which will form a most valuable and interesting representation, for various purposes, of the capabilities of every part of the country in regard to the production of this great staple.

The Canada Company continue their liberal prizes for Wheat, Flax, and Hemp, which have always, especially the first named, been amongst the most highly valued and interesting prizes competed for at our shows.

We need not enter, however, any further into details. It is sufficient to refer to the list itself. and to cordially invite all, agriculturists, horticulturists, mechanics, manufacturers, and artizans, each to prepare to exhibit in every class in which they believe they can produce a superior article, and thus contribute to sustain the high position which the Provincial Exhibition of Upper Canada has won.

We understand that the local preparations at London are proceeding satisfactorily, and on the whole we have good reason to expect that the Exhibition of this year will not be in any respect unworthy of its predecessors.

Dissolving of Bones for Manure.

In all countries that have been subjected to cultivation for any considerable period of time, it may be considered as an axiom, "that without manure no good farming is profitable." This proverb means that with manure we can do any thing, cultivate every thing, which has been clearly proved by experiment. There are few farms even in the newest parts of the country which would not be benefitted by economising and applying all the manure that is made thereon, or that can be conveniently and cheaply procured. But upon old land that has been subjected to continued cropping, manure of some kind is absolutely indispensable. Bones, when minutely reduced, have been found admirably adapted for general manurial purposes, being equally well suited to turnips and the cereals. When treated, however, with sulphuric acid, they become more readily taken into the circulation of plants, and their immediate action rendered more certain and effectual. The following method of dissolving bones will be found both simple and effective.

First, turn over and water the bone-dust thoroughly with as much water or liquid manure as it will absorb; then shovel it all into a conical heap, and cover up carefully and closely with sods, or any material that will not be too porous; in a few days the temperature of the heap will be so high that the naked hand cannot be inserted in it. The object of the close covering is to prevent as much as possible the escape of the gases thrown off during fermentation. When the heap has cooled down again, turn over and water, and cover up as before; and when the heat is at the greatest mix with the acid. Turn off, say two bushels at a time from the side of the heap, spread them out on the floor, and water them well all over; then apply the acid at the rate of one-third the weight of the bones; turn them all over carefully with a shovel, so as to bring the acid in contact with all the pieces of bone. It may be here necessary to mention, in regard to watering the bone-dust, that the affinity of sulphuric acid for water is very great, so much so, that if exposed to the air it will quickly absorb water from the atmosphere, and, consequently, when the bones are partially saturated, the acid, from its great affinity for it, rushes, as it were, into the pores of the bones in search of water, and thus the bones become rapidly and perfectly mixed with and acted no by the acid. When the bones and acid have been thoroughly mixed, shovel them into a corner, and proceed in the same manner with the rest of the heap. From the boiling action produced by mixing the wet bones with the acid, they are apt to spread all over the floor, and cannot be very easily kept together; but after the mixture has been left for an evening to cool, there is no difficulty in laying it up compactly next day, a practice that ought always to be adopted, and in which condition it ought to remain till required for use. A considerable quantity of acid is often lost by this method, unless the floor on which it is done is laid with

stones or some other hard substance, as from the high specific gravity of the acid, and its affinity for moisture, it sinks into an earthen floor. Dried or charred bog earth put at the bottom would tend to absorb it, and also any gaseous matter emitted during decomposition. Bones thus prepared can be drilled with turnip or other seeds, and their action is in general immediate and powerful. This has been the resnlt of experience, whether they have been tried on this or the other side of the Atlantic.

Land Drainage.

To the Editor of the Canadian Agriculturist.—By publishing the following extract from a letter from Mr. John Johnston, near Geneva, New York State, in reply to the inquiries of a Canadian farmer on the subject of the underdraining of land, you will confer a favour on the writer, and a benefit to farmers generally.

Yours, &c., J. W.

Chinguacousy, June, 1861.

Dear Sir,—Yours of the 8th inst. is received, and I will answer it the best I can. It is impossible for me to tell how far apart drains should be, unless I saw the land, and unless I saw some drains dug, and even then I would if I could commence draining in very wet weather, and experiment at from 33 to 40 feet, until I saw which made the land driest. It cannot be made too dry. If your subsoil is very tenacious at 2 to 2½ feet deep, your drains may require to be less than 33 feet apart. With regard to depth, that depends upon how deep you have to go before you get a hard bottom. Drains ought to be at least 2½ feet deep, but if possible you should get down until the water comes in at the sides of the drains, and does not rise from the bottom of your ditch. If you have to go 3½ or four feet deep, before you get as deep as the water lies, I would like it the better. Although it costs a great deal more to dig it, you save a great deal in tile, as you might perhaps put your drains 50 feet or more apart. Four inches deeper for your main drains is enough. I like what is called horse-shoe tile best for side-drains, if the bottom is hard. Side-drains may be the length of your farm, no matter how long that is. If much water runs, you have to increase the size of the tile near the lower end. I have lateral or side-drains 150 rods long and more, and I have no doubt but they might answer ten times that, if you increase the size of the tiles needed; but 2 inchs or 2½ inchs ought to answer in any side-drains. There is a drain-plough made some 12 miles east of this, called the Thomas Draining-Plough, costing not over 12 or 15 dollars, that I hear several speak well of, and said to be very profitable. There is another differently constructed, costing some 25 or 30 dollars, that is also said to be very profitable; but if you can get ditches dug as cheap as I hear they get them in Whitby and Darlington, C.W., say 8 cents per rod for three feet deep, I would never bother with ditching-ploughs. I could procure you either of the above ploughs if you wish it. I am not positive as to price, but it is about the price. Farmers have generally enough of work for their horses without putting them to digging ditches. Paddy and his spade are the only machines I used to dig ditches, and I think them better than any other thing yet invented. I have not seen either of the ploughs at work, but I hear them well spoken of by those who have used them. I am certain of one thing, that underdraining is very profitable when properly done. * * *

Yours, &c., J. J.

The Season—Prognostications of the Weather.

Editor of the Agriculturist,—In the *Agriculturist* of the 6th of April, I stated in a communication to you that your readers may look for a cold and backward spring, with the wind hanging around the north during the greater part of the months of April and May.

You and your readers can now judge how far I was correct.

Now then for the summer quarter, what of it? Well, you may look for a cold summer, the wind will blow mostly from the east and north-east during the three months, with many cloudy days; June is likely to have a larger share of the southerly wind than July or August. From the 6th of June until the 5th of September there will be twenty-six days on which it will rain. By that I do not mean to say it will rain all day, and it may not even fall a shower just where I am, it may pass around either to the north or south of me, but it will be seen in that number of days somewhere amongst your readers.

The inference from these remarks is, that it will be a poor year for corn and a good year for buckwheat, and as it will be rather a dry summer, I advise farmers who can do it to cover the ground with straw or long manure where they have planted their potatos; the ground should be covered with the straw to the thickness of five inches; this will keep the ground moist and prevent the growth of grass or weeds; will save the trouble of hoeing, and will insure a much larger crop than can be produced by any other method of cultivation.

The above plan I have adopted for the last four years with success. Stephen King.

Ryckman's Corners, June, 1861.

Pea Harvesters.

Editors Canadian Agriculturist,—Just on my departure from home the other day, I observed in your number of the first May, an article on "Harvesting Peas," and I have been too hurried, since my return, to reply to your re-

spected correspondent's letter in time for your last issue. Besides, I had hoped some one more able than myself might have given the desired and satisfactory information on the subject which "Dovercourt" wishes to obtain. That, however, not being the case in your last number, I have taken up my pen to state my own opinion and long experience in the matter.

I do not wonder at "Dovercourt's" desire to possess some more expeditious and less expensive mode of harvesting his peas than by the scythe, having, as he says, forty acres to gather; but I regret to say that I can inform him of none, neither do I know of any implement at all suitable to the purpose. I have, as he has done, tried several methods of harvesting my peas, and have returned after all to the old scythe as the best means of gathering the crop, though much too expensive. The horse-rake I have a great aversion to, on account of the vast amount of dirt and rubbish it sends into your barn, together with the heavy labour it inflicts on the loader and unloader of the peas, through the haulm being so twisted and matted together. In fact, in a heavy crop, I consider it little less than *horse labour!*

There is, however, I think, a great mistake made in using too long a scythe-blade, and in rolling the wads up too large. I prefer a short blade and small wads, as in a wet time you can get the latter dry much quicker, and they are handled with far less trouble every way; and in fine weather you are enabled to get your crop quicker into your barn, with less dew upon your straw, and perhaps without any rain at all. Your straw consequently is of a much better quality, which is a great desideratum at all times. Indeed, I do not think that sufficient attention is given, generally speaking, to the securing of pea-straw in the condition it ought to be, nor is its real value as fodder duly estimated by many who grow it.

This crop is often allowed, as well as clover and timothy-hay, to remain far too long in the field after being cut, and thereby becomes dry, dusty, unpalatable, and unwholesome food! Neither the pea straw nor hay, in my opinion, can be secured too green, so long as the sap is properly killed.

I have been led, Messrs. Editors, to write more on this subject than I had intended on taking up my pen, and I much regret that I cannot give my friend "Dovercourt" more satisfactory information on the matter in question; but the inducement in replying to his communication is, in part, for the purpose of suggesting to the Board of Agriculture the *desirability* of offering a LIBERAL *premium* to the mechanics of Canada for the *best machine* for cutting and gathering the pea crop, which is now so extensively grown in the Province. Surely this would put some of our intelligent and able mechanics on their mettle! There is no question but it can be done if once set about; and I feel confident that it would prove a very remunerative affair to the successful producers, as I know of no implement so much needed at the present time by the farmer as the one I am now writing about. The sale, I predict, would be beyond all calculation, if an effective implement were produced, at a reasonable price, as no sensible farmer would long be without it. LEICESTERENSIS.

Guelph, 27th May, 1861.

Drain Tile Machines.

Having received some inquiries in relation to the cost of Drain Tile Machines, where they are to be had, the amount of work they will do, &c., we insert the following chapter from a work on "Farm Drainage," written by Mr. H. F. French; published by C. M. Saxton, Barker, & Co., New York. We commend this work to those interested in the subject of Drainage. It contains information relating to every detail, and is copiously illustrated. It is sold by Mr. James Bain, Bookseller, Toronto. We observe that the prices mentioned of tiles in the United States are much higher than those at which tiles of excellent quality are sold in this city. The prices here correspond more nearly to the English rates.

"The prices at which tiles are sold is only, as the lawyers say, *prima facie* evidence of their cost. It seems to us, that the prices at which tiles have thus far been sold in this country, are very far above those at which they may be profitably manufactured, when the business is well understood, and pursued upon a scale large enough to justify the use of the best machinery. The following is a copy of the published prices of tiles at the Albany Tile Works, and the same prices prevail throughout New England, as far as known:

Horse-Shoe Tile.—Pieces.

2½ inches rise	$12	per 1000
3½ " "	15	"
4½ " "	18	"
5½ " "	40	"
6½ " "	60	"
7½ " "	75	"

Sole-Tile.—Pieces.

2 inches rise	$12	per 1000
3 " "	18	"
4 " "	40	"
5 " "	60	"
6 " "	80	"
8 " "	125	"

Few round pipe-tiles have yet been used in this country, although they are the kind generally preferred by engineers in England. The prices of round tiles would vary little from those of sole-tiles.

Tiles are usually cut fourteen inches long, and shorten in drying and burning, to about twelve and a-half inches, so that with breaking, and other casualties, they may be calculated to lay about one foot each; that is to say, 1,000 tiles may be expected to lay 1,000 feet of drains.

To assist those who desire to manufacture tiles for sale, or for private use, it is proposed to give such information as has been gathered from various sources as to the cost of making, and the selling prices of tiles, in England. The following is a memorandum made at the residence of Mr. Thomas Crisp, at Butley Abbey, in Suffolk-Co., Eng., from information given the author on the 8th of July, 1857:

"Mr. Crisp makes his own tiles, and also supplies his neighbors who need them. He sells one and a half inch pipes at 12s. ($3) per 1,000. He pays 5s. ($1.25) per 1,000 for having them made and burnt. His machine is Waller's patent, No. 22, made by Garret and Son, Leiston, Saxemundham, Suffolk. It works by a lever, makes five one and a half inch pipes at once, or three sole-tiles, about two inch. The man at work said, that he, with a man to carry away, &c., could make 4,000 one and a half inch pipes per day. They used no screen, but cut the clay with a wire. The machine cost £25 (about $125). At the kiln, which is permanent, the tiles are set on end, and bricks with them in the same kiln. They require less heat than bricks, and *cost about half as much* as bricks here, which are moulded ten inches by five.

"Two girls were loading bricks into a horse-cart, and two women receiving them, and setting them in the kiln. They made roof-tiles with the same machine, and also moulded large ones by hand. The wages of the women are about 8d. (sixteen cents) per day."

At the exhibition of the Royal Agricultural Society, in England, the author saw Williams' Tile Machine in operation, and was there informed by the exhibitor, who said he was a tile-maker, that it requires *five-sevenths as much coal to* burn 1,000 two-inch tiles, as 1,000 bricks—the size of bricks being 10 by 5; and he declared, that he, with one boy, could make with the machine, 7,000 two-inch tiles per day, after the clay is prepared. Of course, one other person, at least, must be employed to carry off the tiles.

Mr. Denton gives his estimates of the prices at which pipe-tiles may be procured in England, as follows—the prices, which he gives in English currency, being translated into our own:

'When ordinrry agricultural labor is worth $2 50 per week, pipes half one and a half inch, and half two-inch, may be taken at an average cost of $4 38 per 1,000. When labor is $3 00 per week, the pipes will average $5 00 per 1,000, and when labor is $3 50, they will rise to $5 62.'

He adds: "In giving the above average cost of materials, those districts are excluded from consideration, where clay suitable for pipes exists in the immediate vicinity of coal-pits which must necessarily reduce the cost of producing them very considerably."

Taking the averages of several careful estimates of the cost of tiles and bricks, from the 'Cyclopædia of Agriculture,' we have the prices of tiles in England about $5 per 1,000, and the price of bricks $7 87, from which the duty of 5s. 6d. should be deducted, leaving the average price of bricks $6 50. Upon tiles there is no such duty. Bricks in the United States are made of different sizes, varying from 8 ⋈ 4 in. to the English standard 10 ⋈ 5 in. Perhaps a fair average price for bricks of the latter size, would be not far from $5 per 1,000; certainly below $6 50 per 1,000. There is no reason why tiles may not be manufactured in the United States, as cheaply, compared with the price of bricks, as in England; and it is quite clear that tiles of the sizes named, are far cheaper than common bricks.

What is wanted in this country is, first, a demand sufficient to authorize the establishment of works extensive enough to make tiles at the best advantage; next competent skill to direct and perform the labor; and, finally, the best machinery and fixtures for the purpose. It is confidently predicted, that, whenever the business of tile-making becomes properly established, the ingenuity of American machinists will render it easy to macufacture tiles at English prices, notwithstanding the lower price of labor there; and that we shall be supplied with small tiles in all parts of the country, at about the current prices of bricks, or at about one half the present Albany prices of tiles, as given at the head of this chapter. It should be mentioned here, perhaps, that in England, it is common to burn bricks and tiles together in the same kiln, placing the tiles away from the hotest part of the furnace; as, being but about half an inch in thickness, they require less heat to burn them than the bricks.

In the estimates of labor in making tiles in England, a small item is usually included for 'rolling.' Round pipes are chiefly used in England. When partly dried, they are taken up on a round stick, and rolled upon a small table to preserve their exact form. Tiles usually flatten somewhat in drying, which is not of much importance in any but round pipes, but those ought to be uniform. By this process of rolling, great exactness of shape, and a great degree of smoothness inside, are preserved."

TILE MACHINES.

Drainage with tiles is a new branch of husbandry in America. The cost of tiles is now a great obstacle in prosecuting much work of this kind which the land owners desire to accomplish. The cost of tiles, and so the cost of drainage, depends very much—it may be said chiefly—up-

on the perfection of the machinery for tile-making; and here, as almost everywhere else, agriculture and the mechanical arts go hand in hand. Labor is much dearer in America than in Europe, and there is therefore, more occasion here than there, for applying mechanical power to agriculture. We can have no cheap drainage until we have cheap tiles; and we can have cheap tiles only by having them made with the most perfect machinery, and at the lowest prices at which competing manufacturers, who undestand their business, can afford them.

In the preceding remarks on the *cost of tiles*, may be found estimates, which will satisfy any thinking man that tiles have not yet been sold in America at reasonably low prices.

To give those who may desire to establish tileries, either for public or private supply, information, which cannot readily be obtained without great expense of English books, as to the prices of tile machines, it is now proposed to give some account of the best English machines, and of such American inventions as have been brought into notice.

It is of importance that American machinists and inventors should be apprised of the progress that has been made abroad in perfecting tile machines; because, as the subject attracts attention, the ingenuity of the universal Yankee nation will soon be directed toward the discovery of improvements in all the processes of tile-making. Tiles were made by hand long before tile machines were invented.

A Mr. Read in the "Royal Agricultural Journal," claims to have used *pipe* tiles as early as 1795, made by hand and formed on a round stick. No machine for making tiles is described, before that of Mr. Beart's, in 1840, by which 'common tile and sole (not pipes or tubes) were made.' This machine, however, was of simple structure, and not adapted to the varieties of tiles now used.

All tile machines seem to operate on the same general principle—that of forcing wet clay, of the consistency of that used in brick-making through apertures of the desired shape and size. To make the mass thus forced through the aperture, *hollow*, the hole must have a piece of metal in the centre of it, around which the clay forms, as it is pushed along. This centre piece is kept in position by one or two thin pieces of iron, which of course divide the clay which passes over them, but it unites again as it is forced through the die, and comes out sound, and is then cut off, usually by hand, by means of a small wire, of the required length, about fourteen inches.

Tile machines work either vertically or horizontally. The most primitive machine which came to the author's notice abroad, was one which we saw on our way from London to Mr. Mechi's place. It was a mere upright cylinder, of some two feet height, and perhaps eight inches in diameter, in which worked a piston. The clay was thrown into the cylinder, and the piston brought down by means of a brake, like an old-fashioned pump, and a single round pipe tile forced out at the bottom. The force employed was one man and two boys. One boy screened the clay, by passing through it a wire in various directions, holding the wire by the ends, and cutting through the mass till he had found all the small stones contained in it. The man threw the mass thus prepared into the cylinder, and put on the brake, and the other boy received the tile, upon a round stick as they came down through the die at the bottom, and laid them away. The cylinder held clay enough to make several, perhaps twenty, two-inch pipes. The work was going on in a shed, without a floor, and upon a liberal estimate, the whole establishment, including shed and machine, could not cost more than fifty dollars. Yet, on this simple plan, tiles were moulded much more rapidly than bricks were made in the same yard, where they were moulded singly, as they usually are in England. It was said that this force could thus mould about 1,800 small tiles per day.

This little machine seems to be the same described by Mr. Parkes as in general use in 1843, in Kent and Suffolk Counties.

Most of the tile machines now in use in England and America are so constructed, as to force out the tiles on a horizontal frame-work, about five two-inch, or three three-inch pipes abreast. The box to contain the clay may be upright or horizontal, and the power may be applied to a wheel, or by a crank turned by a man, or by horse, steam, or water power, according to the extent of the works.

We saw at the Exhibition of the Royal Agricultural Society, at Salisbury, in England, in July, 1857, the 'pipe and clay machine,' of W. Williams, of Bedford. It was in operation for exhibition, and was worked by one man, who said he was a tile maker, and that he and one boy, could make with the machine 7,000 two-inch tiles per day, after the clay was prepared in the pug mill. Four tiles were formed at once, by clay passed through four dies, and the box holds clay enough for thirty-two two-inch tiles, so that thirty-two are formed as quickly as they can be removed, and as many more as soon as the box can be refilled.

The size No. 3, of this machine, such as we then saw in operation, and which is suitable for common use, costs at Bedford, $88 50, with one set of dies; and the extra dies for making three, four, five and six-inch pipes, and other forms, if desired, with the *horses*, as they are called, for removing the tiles, cost about five dollars each. This, like most other machines, is adapted to making tiles for roofs, much used in England instead of shingles or slates, as well as for draining purposes.

There are several machines now in use in England, namely: Etheridge's, Clayton's, Scragg's, Whitehead's, and Garret's—either of which

would be satisfactory, according to the amount of work desired.

We have in America several patented machines for making tiles, of the comparative merits of which we are unable to give a satisfactory judgment. We will, however, allude to two or three,, advising those who are desirous to purchase, to make personal examination for themselves. We are obliged to rely chiefly on the statements of the manufacturers for our opinions.

Daine's American Drain Tile Machine is manufactured at Birmingham, Michigan, by John Daines. This machine is in use in Exeter, N. H., close by the author's residence, and thus far proves satisfactory. The price of it is about $100, and the weight, about five hundred pounds. It occupies no more space than a common three-and-a half foot table, and is worked by a man at a crank. It is capable of turning out, by man power, about two hundred and fifty two-inch tiles in an hour, after the clay is prepared in a pug mill. Horse or water power can be readily attached to it.

Pratt's Tile Machine is manufactured at Canandaigua, New York, by Pratt & Brothers, and is in use in various places in that State, as well as elsewhere. This machine differs from Daine's in this essential matter, that here the clay is *pugged*, or tempered, and formed into tiles at one operation, while with Daine's machine, the clay is first passed through a pug mill, as it is for making bricks in the common process.

Pratt's machine is worked by one or two horses, or by steam or water power, as is convenient. The price of the smaller size, worked by one horse, is $150, and the price of the larger size, worked by two horses, $200. Professor Mapes says he saw this machine in operation and considers it 'perfect in all its parts.' The patentees claim that they can make, with the one horse machine, 5,000 large tiles a day. They state also that 'two horses will make tiles about as cheap as bricks are usually made, and as fast, with the large sized machine.'

These somewhat indefinite statements are all that we can give, at present, of the capacity of the machines. We should have no hesitation in ordering a Pratt machine were we desirous of entering into an extensive business of Tile-making, and we should feel quite safe with a Daine's machine for a more limited manufacture.

S. C. Sailsbury, at the Novelty Works, in the city of New York, is manufacturing a machine for making tiles and bricks, which exhibits some new and peculiar features, worthy of attention by those who propose to purchase tile machines, Prof. Mapes expresses the confident opinion that this machine excells all others, in its capacity to form tiles with economy and rapidity. We have examined only a model. It is claimed that the large size, with horse power, willl make 20,000 two-inch tiles per day, and the hand-power machine, 3,000 per day. We advise tile-makers to examine all these machines in operation, before purchasing either."

Agricultural Intelligence.

Salt and its Offices.—Some modern agricultural writers have doubted the necessity of giving animals salt. The following remarks as to the effect of salt upon health, by Professor Johnston, may be relished by those who still put salt in their own puddings, and allow their cattle now and then :—

The wild buffalo frequents the salt licks of Northwestern America; the wild animals of the central parts of South Africa are a sure prey to the hunter who conceals himself behind a salt spring; and our domestic cattle run peacefully to the hand that offers them a taste of this delicious luxury. From time immemorial, it has been known that, without salt, man would miserably perish; and among horrible punishments, entailing certain death, that of feeding culprits on saltless food is said to have prevailed in barbarous times. Maggots and corruption are spoken off by ancient writers as the distressing symptoms which saltless food engenders; but no ancient or unchemical modern could explain how such sufferings arose. Now we know why the animal craves salt—why it suffers discomfort, and why it ultimately falls into disease if salt is for a time witheld. Upward of half the saline matter of the blood (57 per cent) consists of common salt, and as this is partially discharged every day through the skin and the kidneys, the necessity of continued supplies of it to the healthy body becomes sufficiently obvious. The bile also contains soda as a special and indispensable constituent, and so do all the cartilages of the body. Stint the supply of salt, therefore, and neither will the bile be able properly to assist the digestion, nor allow the cartilages to be built up again as fast as they naturally waste.

Salting Fence Posts.—A correspondent of the New Hampshire *Journal of Agriculture*, in speaking of fence posts, says, that thirty years ago he set some fence posts which, upon recent examination, proved to be perfectly sound. This preservation he attributes to the fact of his having bored each post with a two inch auger, about three inches above the ground, filling the hole with salt and plugging it up. The quantity of salt to each post was about half a pint.

Horticultural.

Toronto Horticultural Society.

The first Exhibition of the season of this Society took place in the St. Lawrence Hall, on Thursday, May the 30th, and, notwithstanding the lateness of the season, it surpassed, in the floral department, both as to magnitude and excellence, any previous Spring Show held in this

city. The number of green and hot-houses in and about the city has of late very much increased, and is still increasing; and a very lively interest is being taken by their owners in adding to the extent and attractiveness of the Horticultural Exhibitions. The number of visitors throughout the day, particularly in the evening, was very much greater than usual, a circumstance that must act beneficially on the income of the Society, which needs, and is highly deserving of augmentation. A few years ago, the Exhibitions mainly depended upon a small number of nurserymen for green-house and store plants, but now by far the largest quantity is contributed by gentlemen resident in the vicinity, who employ gardeners distinguished for skill and ability, whose productions would take rank by the side of those which characterize similar Exhibitions in Europe. We have no space for details, and must content ourselves mainly with a few general remarks. Among the splendid collection of green-house and stove-plants, the following were conspicuous:—*Euphorbia Splendens, Swansonia Purpuria, Meyeria Erecta, and Combretum Purpureum,* from the conservatory of the Hon. S. B. Harrison, who also exhibited some very fine orchids, the singularity of whose growth attracted much attention. The collection of calceolarias was of a very high order of merit, chiefly contributed by Hon. J. C. Morrison, Mr. Killaly, and Mr. McPherson; the latter also sent a magnificent orange-tree in full blossom, with several large and apparently ripe fruit, which elicited universal admiration, and the perfume of which was delicious. Some very fine roses were contributed by Mr. Morrison and Mr. John Gray, of the Lakeview Nursery. Mr. Fleming of the Yonge Street Nursery had some very fine Carnations and Azalias, and his Pansies were said by competent judges to be quite unsurpassed in this country. A peach-tree in full bearing, with some of its fruit well ripened, from the hot-house of Mr. W. H. Boulton, attracted much attention; and there was quite a number of apples, in an excellent state of preservation, chiefly contributed by the President, Hon. Mr. Allan, and Mr. Stibbard. Mr. J. D. Humphreys contributed two large dishes of mushrooms, which could hardly be surpassed anywhere. In early spring vegetables, such as sea-kale, carrots, potatoes, asparagus, &c., the show was much better than we expected, considering the backwardness of the season; the quantity, if small, was fully compensated by its superior quality. A curiosity in its way was a large and well grown specimen of a Chinese yam, (*Dioscorea Batatas,*) exhibited by Judge Harrison. A few years ago, the Board of Agriculture imported some small tubers of this root, and distributed them for trial. Hopes were held out that they would prove a substitute for the potato, but results, as so far obtained, both here and in Europe, go to show that such expectations are not likely to be realized.

Hamilton Horticultural Society's Exhibition.

Mr. Editor,—Knowing you to be interested in all the Cultures, I cannot allow our late Horticultural Exhibition held here on the Queen's Birth day to pass unnoticed. I can assure you Sir, the display was an excellent one, particularly of Fuchsias, Geraniums and Calceolarias. There was also forward a good collection of Green House and stove plants, including some very fine new and rare foliage plants. As you have seen the prize list it is unnecessary for me to go into its details. The Begonias from the gardens of John Brown, Esq., and W. P. MacLaren, Esq., were beautiful, Mr. Brown's varieties, Begonia Rex B. Marshallen, and B. Zanthina, carried off the prize; Mr. MacLarens varieties, Begonia Griffithi, B. Argenta Ramifolia; from the gardens of the same gentlemen there were two collections of very fine foliage plants. The Varieties from Mr. MacLaren's that took the prize were Coleus Clumei, Cissus discolor, Maranta bicolor, Caladium chantini, Aspidistra elatior and Croton variegatum; Mr. Brown's were Pavetta borbonica, Maranta alva linata, Maranta Tiberina, Cissus discolor, Mussaenda frondosa and Caladim chantini.

The prize Fuchsias, Geraniums and Calceolarius were from the gardens of John Young, Esq., R. Juson, Esq., W. P. MacLaren, Esq., and John Brown, Esq., and were all very creditable to the growers, particularly the Calceolarius, which were very fine. The Fuchsias were much admired for their height and profuse bloom. I really think, Mr. Editor, you will have to give our gardeners a wee bit of advice on the culture of Fuchsias and Geraniums, for if they go on as they have been doing, there will be no getting either head or side room for them. There is no accounting for taste, but I am inclined to think if you could advise them to be satisfied with less height, and to go more on the dwarf system, you would bestow on them a favor. Were they all to be confined to less and equal sized pots, both for the Fuchsias and Geraniums, I think the

merits of the grower would be much better tested, than they can be by the present unequal sized pots system. I do not think that it is height and bulk that are wanted, but perfection in form, substance, and beauty in flower.

Many of our citizens take a lively interest in our Society, and in general offer a long list of special prizes, which on the late occasion were well contested. A Grape vine in a twelve or thirteen inch pot from W. P. MacLaren, Esq., attracted considerable attention, it would be about three feet high and had seven very fine bunches of grapes on it nearly ripe. This mode of fruit culture is one of the best and ought to be encouraged; it is pleasing, profitable and interesting.

In the collection of plants from Messrs Bruce and Murray I observed a fine plant of the Gzania splendens in flowers. I think it worthy of its name, and it will make an excellent bedder.

The whole affair went off beautifully. Hamilton may well be proud of her flower shows—her gardeners in many things would be hard to beat. I said above that I thought our gardeners would be the better of a wee bit of advice from you, and in it, if you could but induce them to pay a little more attention to the Pansy, Auricula, Polyanthus and Chrysanthemum, all fine florist's plants, the latter excellent for the Green House and Conservatory in winter.

And now in conclusion, do you think Mr. Editor that you could concoct a plan, whereby a trial of strength might be had between us Hamiltonians the Toronto brethren; such a thing if you could manage it would, I think tend to much good. yours, &c.,

HORTUS.

Hamilton, May 31, 1861.

[We are happy to hear of the continued prosperity of the Hamilton Horticultural Society. From what we observed at one of its exhibitions two or three years ago we formed a high opinion of the enterprize and skill of its competing members. The best way probably in which Hamilton and Toronto can promote the interests of the Horticultural art, is to continue the present practice of interchanging kindly feelings and good offices.]—ED.

Veterinary.

Veterinary Science.

EDITOR OF THE AGICULTURIST,—The columns of your valuablejournal being ever open to receive and give all information that pertains to the advancement of agriculture in this fine province, I take the liberty of forwarding to you the following communication upon a most important branch of science, one of vital importance to all having the care and management of stock; but which I am sorry to say, has hitherto been sadly neglected. By giving the enclosed a place in your next issue, you will confer a favor on a friend of agricultural prosperity.

Your obedient servant,

A SUBSCRIBER.

County of Quebec, C. E., May 24th, 1861.

VETERINARY SCHOOLS:

(To the Editor of the Morning Chronicle.)

SIR,—Will you kindly permit me, through the agency of your widely read columns, to address a few words, as a practical farmer, to the agriculturists of Canada, and all who feel a genuine interest in the progressive improvement and consequent prosperity of our noble province.

The subject matter of my remarks will be the necessity existing for the establishment of thoroughly scientific schools for veterinary instructions. The reasons which concur in urging earnest action in this matter are many—too many to be embraced in the space allotted to a newspaper correspondent. One thing, however, is self evident, and that is, that with regard to agricultural progress, no branch of it has hitherto been so sadly neglected as the highly important and most useful one of scientific veterinary surgery. The Province has, from time to time, been everrun by a host of quacks and horse leeches, whose mission it is, not to cure, but to kill and destroy the many valuable animals foolishly intrusted to their care; and in contradistinction to this fact, I would wish to call the particular attention of all interested in this important subject to the rapid strides which veterinary art is making in the British Isles. Already two colleges for veterinary instructions are established, one in London, the other in Edinburgh, the latter patronized by the Highland Agricultural Society of Scotland, both of which institutions send out a number of students every year. Few counties in Canada would, I believe, find any difficulty in providing a sober and intelligent young man, who, with very moderate pecuniary aid, may be enabled to attend one of these colleges, where he would find profitable employment at the forge, and having ultimately obtained his diploma, would return to settle in his own country, thoroughly instructed not only in the treatment of live stock of every description under the effect of accident and disease, but in that important branch, scientific horse-shoeing.

I would earnestly draw the attention of our Board of Agriculture and the legislators of the province to this subject. We need a good veterinary school to educate physicians and surgeons for our cattle of all kinds. When a man has a horse fall sick, whose value may be from two hundred to three hundred dollars, he feels the need of a physician as much, almost, as if he was sick himself. Besides, is it not hard

to stand by and see a fine animal writhing in agony, yet be utterly unable to do anything for its relief? A human being can tell where his pain is, and even a child can give some notion of its ailment, so that, even if we do not get a physician we can do something to relieve it. An animal, however, is helpless. Some practitioners try everything they can think of, others guess at the complaint, and administer just the right thing or just the wrong thing, as they happen to guess rightly or wrongly. Now this is too bad. I know an old crony of a blacksmith who calls himself a farrier; true he can draw blood and give a ball or glyster, but he cannot tell "when to do it or when to leave it alone."

In conclusion, Mr. Editor, allow me to state the great benefits enjoyed by farmers and others resident in this city and its neighborhood, in having at command the servides of Mr. Waddell, a most distinguished veterinary surgeon, of the London and Edinburgh colleges. His abilities as a physician and surgical operator have been most satisfactorily established by the successful results of his practice, and the performance of several very difficult operations on the horse, such as "neurotomy" and "tracheotomy," operations which until his arrival, had never been successfully performed by any one in this city.

I remain, &c.,

MATTHEW DAVIDSON.

Quebec, April, 1861.

[In regard to the foregoing, we may observe that the Board of Agriculture of Upper Canada has been for some time in correspondence with parties with a view of obtaining from Europe a thoroughly qualified veterinary surgeon, to reside in Toronto, give lectures, undertake the treatment of diseased animals, &c., under the sanction of the Board, and establish in fact what would become the nucleus of a veterinary school. We have every expectation that this project will be carried into effect at an early day —ED.]

PROVINCIAL EXHIBITION.

SIXTEENTH EXHIBITION OF THE PROVINCIAL AGRICULTURAL ASSOCIATION, TO BE HELD AT LONDON, ON TUESDAY, WEDNESDAY, THURSDAY, AND FRIDAY, SEPTEMBER 24, 25, 26, & 27.

RULES AND REGULATIONS.

"The members of the Agricultural Societies of the several Townships within the County, or Electoral Division or United Counties, wherein the Annual Exhibition may be held, and the members of the said County or Electoral Division Society, shall be also members of the Association for that year, and have member's tickets accordingly; provided the Agricultural Societies of the said Townships, or the Society of the said County or Electoral Division or United Counties, shall devote their whole funds for the year, including the Government Grant, in aid of the Association. The Office-bearers of all County Societies shall have tickets of free entrance during the show.—*By-Law.*"

1. The payment of $1 and upwards constitutes a person a member of the Agricultural Association of Upper Canada for one year; and $10 for life, when given for that specific object, and not as a contribution to the local funds.

2. No one but a member shall be allowed to compete for prizes except in classes, 29, 39, 47, 48, and 59.

3. All entries must be made on printed forms, which may be obtained of the Secretaries of Agricultural Societies, or of Mechanics' Institutes, free of charge. These forms are to be filled up and signed by the exhibiter, enclosing a dollar for membership, and sent to the Secretary of the Association, Board of Agriculture, Toronto, ON OR BEFORE SATURDAY, AUGUST 31st, after which no entries can be taken except in the Horticultural and Ladies' Departments, and Foreign classes.

Exhibitors in these Departments may enter articles up to Monday Evening of the show week, when the Books will be finally closed.

4. *Blood Horses, and thorough-bred Cattle* must be entered, and have their full pedigree properly attested and sent to the Secretary in Toronto, *not later than Saturday, August 24th.* No animal will be allowed to compete as pure bred, unless they possess regular Stud and Herd Book pedigrees, or satisfactory evidence be produced that they are directly descended from such stock. In the class of Durham cattle, particularly, no animal will be entered for competition, unless the pedigree of the same be first inserted in the English or American Herd Book, or in the Upper Canada Stock Register, kept at the office of the Board of Agriculture.

5. Tickets from the Treasurer's Office will be furnished each exhibiting member, till Monday evening, Sept. 23rd, which will admit himself only, free to every department of the exhibition, during the Show. Life members admitted free throughout the Exhibition.

No members' tickets will be issued after Monday evening, but those issued up to that time will be good till the close of the show.

Necessary attendants upon stock and articles, belonging to exhibitors, will be furnished with admission tickets with their names written upon them, which ticket will be good at the *Exhibitors' Gate only.*

6. The admission fees to non-members, on Tuesday and Wednesday, will be half-a-dollar, and on Thursday and Friday, a quarter dollar, each time of entering through the gates.

Tickets of admission to those who are not members, will be issued on and after Tuesday morning, at 25 cents each,—two such tickets to be given up at the gates each time of admission, on Tuesday and Wednesday, and one

such ticket on Thursday and Friday, in accordance with the above rates. Children under fourteen years of age, half-price. Carriages to pay one dollar each admission; each occupant, except the driver, to be also provided with the usual admission ticket. Horsemen half a dollar.

7. Every article, other than live stock, exhibited for competition, must be the growth, product, or manufacture of Canada, except in classes 39 and 59. Live stock, except in class 29, must be the *bona fide* property of persons residing in Canada, and must be exhibited in the name of the owner only.

☞ *All premiums for Articles, except Stock, are to be awarded to the manufacturers or producers only.*

8. Articles for Exhibition must be on the grounds on Monday, Sept. 23, except live stock, which must be there not later than Tuesday at noon.

9. Discretionary Premiums will be awarded for such articles as may be considered worthy by the Judges, although not enumerated in the list, and the Directors will determine the amount of premium.

In the Fine Arts and Mechanical Department, Diplomas will be awarded—in addition to the money prizes—to any specimen evincing great skill in its production, or deemed otherwise worthy of such a distinction, on its being recommended by the Judges and approved of by the Committee to whom all such matters shall be referred.

In the abscence of competition in any of the Classes, or if the Stock or articles exhibited be of inferior quality, the Judges will exercise their discretion as to the value of the premiums they recommend.

No person will be allowed to interfere with the judges while in the discharge of their duties. Any person so interfering will forfeit any premium which may be awarded them.

11. A GENERAL SUPERINTENDENT will be appointed, who will have the general supervision of the grounds, and the arrangements of the Exhibition. He will have an office upon the ground; where all persons having inquiries to make in relation to the arrangements will apply.

No articles or stock exhibited will be allowed to be removed from the grounds, till the close of the exhibition, under the penalty of losing the premiums. The exhibition will close immediately upon the delivery of the President's address on Friday afternoon. An Auctioneer will be on the ground after the premiums are announced, and every facility afforded for the transaction of business.

12. Delegates, Judges and Members of the Press are requested and expected to report themselves at the Secretary's Office, immediately on their arrival.

13. The Judges are to meet at the Secretary's Office on the Grounds, on Tuesday, 24th, at noon, to make arrangements for entering upon their duties.

14. The Annual Meeting of the Directors of the Association will take place on the grounds on Friday morning, 27th, at 10 o'clock.

15th. While the Directors will take every possible precaution, under the circumstances, to insure the safety of articles sent to the exhibition, yet they wish it to be distinctly understood that the owners must themselves take the risk of exhibiting them; and that should any article be accidentally injured, lost, or stolen, the Directors will give all the assistance in their power towards the recovery of the same, but will not make any payment for the value thereof.

Exhibitors must provide for the delivery of their articles upon the show ground. The Association cannot in any case make provision for their transportation, or be subjected to any expense therefor, either in their delivery at or return from the grounds; all the expenses connected therewith must be provided for by the Exhibitors themselves.

16. The Treasurer will be prepared to commence paying the premiums on Saturday, 28th, at 9 a. m., and parties who shall have prizes awarded them are particularly requested to apply for them before leaving London, or leave a written order with some person to receive them, stating the articles for which prizes are claimed.

N.B.—In case the Directors shall require any particular information in reference to animals or articles taking first prizes, the owners will be expected to transmit it, when requested to do so.

☞ The Local Committee will make arrangements with Steamboat and Railroad proprietors for carrying articles and passengers at reduced rates.

Provender will be provided by the Association for live stock at cost price.

Arrangements will be made with the Customs department for the free entry of articles for competition.

Prize List.

DEPARTMENT FIRST.

Live Stock, Agricultural and Horticultural Products, Implements, &c.

MEDALS.—In all cases the winner of a first prize of $40 will be entitled to the Association's Gold Medal, value $40, instead, if he prefer it, and the winner of a first prize of $20, or upwards will be entitled to the Silver Medal, at $10, if heprefer it, with the difference in money.

HORSES.

CLASS I.—BLOOD HORSES.

Sect.		$	c.
1.	Best thorough-bred stallion.....	40	00
	2d do	25	00
	3d do.....	12	00
2.	Best 3 years old stallion	22	00
	2d do.....	14	00
	3d do.....	7	00

Sect.		$ c.
3. Best 2 years old stallion		14 00
2d	do	10 00
3d	do	5 00
4. Best yearling colt		8 00
2d	do	6 00
3d	do	4 00
5. Best thorough-bred stallion of any age,		Diploma.
6. Best 3 years old filly		18 00
1d	do	11 00
3d	do	7 00
7. Best 2 years old filly		14 00
2d	do	11 00
3d	do	7 00
8. Best yearling filly		10 00
2d	do	6 00
3d	do	4 00
9. Best mare and foal, or evidence that the foal has been lost		22 00
2d	do	14 00
3d	do	6 00
10. Extra entries.		

Pedigree to be produced in this class.

CLASS II.—AGRICULTURAL HORSES.

1. Best stallion for agricultural purposes		40 00
2d	do	25 00
3d	do	12 00
2. Best 3 year old stallion		22 00
2d	do	14 00
3d	do	7 00
3. Best 2 years old stallion		14 00
2d	do	10 00
3d	do	7 00
4. Best yearling colt		8 00
2d	do	6 00
3d	do	4 00
5. Best agricultural stallion any age,		Diploma.
6. Best 3 years old filly		18 00
2d	do	11 00
3d	do	7 00
7. Best 2 years old filly		14 00
2d	do	9 00
3d	do	4 00
8. Best yearling filly		8 00
2d	do	6 00
3d	do	4 00
9. Best brood mare and foel, or evidence that the foel has been lost.		22 00
2d	do	14 00
3d	do	6 00
10. Best span matched farm or team horses		20 00
2d	do	15 00
3d	do	10 00
11. Extra entries.		

CLASS III.—ROAD OR CARRIAGE HORSES.

1. Best roadster or carriage stallion, 4 years old and upwards		40 00
2d	do	25 00
3d	do	12 00
2. Best do. 3 years old		22 00
2d	do	14 00
3d	do	7 00

Sect.		$ c.
3. Best do. 3 years old		14 00
2d	do	10 00
3d	do	5 00
4. Best yearling colt		8 00
2d	do	6 00
3d	do	4 00
5. Best stallion of any age,		Diploma.
6. Best French Canadian stallion		30 00
2d	do	20 00
3d	do	10 00
7. Best 3 years old roadster filly		18 00
2d	do	11 00
3d	do	7 00
8. Best 2 years old filly		14 00
2d	do	9 00
3d	do	4 00
9. Best yearling filly		8 00
2d	do	6 00
3d	do	4 00
10. Best brood mare and foal, or evidence of foal having been lost		22 00
2d	do	14 00
3d	do	6 00
11. Best pair matched carriage horses		20 00
2d	do	15 00
3d	do	10 00
12. Best single carriage horse in harness		10 00
2d	do	8 00
3d	do	6 00
13. Best saddle horse		10 00
2d	do	8 00
3d	do	6 00
14. Extras.		

CLASS IV.—HEAVY DRAUGHT HORSES.

1. Best heavy draught stallion		40 00
2d	do	25 00
3d	do	12 00
2. Best 3 years old stallion		22 00
2d	do	14 00
3d	do	7 00
3. Best 2 years old stallion		14 00
2d	do	10 00
3d	do	5 00
4. Best yearling colt		8 00
2d	do	6 00
3d	do	4 00
5. Best draught stallion, any age		Diploma.
6. Best 3 year old filly		18 00
2d	do	11 00
3d	do	6 00
7. Best 2 years old filly		14 00
2d	do	9 00
3d	do	4 00
8. Best yearling filly		8 00
2d	do	6 00
3d	do	4 00
9. Best broad mare and foal, or evidence that the foal has been lost		22 00
2d	do	14 00
3d	do	6 00
10. Best span of draught horses		20 00
2d	do	15 00
3d	do	10 00
11. Extra Entries		

CLASS V.—HORSES FOR GENERAL PURPOSES, THE PRINCE OF WALES PRIZE.

	$ c.
Best stallion for general purposes, Prize presented by His Royal Highness the Prince of Wales..	60 00

CATTLE.

CLASS VI.—DURHAMS.

Sect.		$ c.
1. Best bull 4 years old and upwards.		36 00
2d	do	23 00
3d	do	16 00
4th	do	8 00
2. Best 3 years old bull		32 00
2d	do	20 00
3d	do	12 00
4th	do	6 00
3. Best 2 years old bull		24 00
2d	do	16 00
3d	do	9 00
4th	do	5 00
4. Best 1 year old bull		20 00
2d	do	12 00
3d	do	8 00
4th	do	4 00
5. Best bull calf (under 1 year)		16 00
2d	do	10 00
3d	do	6 00
4th	do	3 00
6. Best bull of any age		Diploma.
7. Best cow		20 00
2d	do	12 00
3d	do	8 00
4th	do	4 00
8. Best 3 years old cow		16 00
2d	do	10 00
3d	do	6 00
4th	do	4 00
9. Best 2 years old heifer		12 00
2d	do	8 00
3d	do	5 00
4th	do	3 00
10. Best 1 year old heifer		10 00
2d	do	6 00
3d	do	4 00
4th	do	2 00
11. Best heifer calf (under one year)		6 00
2d	do	4 00
3d	do	2 00
4th	do	1 00
12. Best herd of Durhams, consisting of one bull, and not less than four cows or heifers, or cows and heifers, of any age		40 00

11. Extra Entries.

N. B.—A certificate of HERD BOOK PEDIGREE, or a sufficient Reference to the Herd Book in which they are registered, will be required of all animals in the Durham class, along with or previous to the application to enter them for exhibition. The pedigrees of others should be as full and correct as possible.

CLASS VII.—DEVONS.

List of Prizes the same as in Class VI.

CLASS VIII.—HEREFORDS.

Prizes the same as Class VI.

CLASS IX.—AYRSHIRES.

Prizes the same as Class VI.

CLASS X.—GALLOWAY CATTLE.

Prizes the same as Class VI.

CLASS XI.—BULL OF ANY BREED.

For the best bull of any age or breed, Diploma and Silver Medal.

CLASS XII.—GRADE CATTLE.

Sect.		$ c.
1. Best Grade cow		20 00
2d	do	12 00
3d	do	8 00
4th	do	5 00
2. Best 4 year old grade cow		20 00
2d	do	12 00
3d	do	8 00
4th	do	5 00
3. Best 3 years old cow		16 00
2d	do	10 00
3d	do	6 00
4th	do	4 00
4. Best 2 years old heifer		12 00
2d	do	8 00
3d	do	5 00
4th	do	3 00
5. Best 1 year old heifer		10 00
2d	do	6 00
3d	do	4 00
4th	do	2 00
6. Best heifer calf (under 1 year)		6 00
2d	do	4 00
3d	do	2 00
4th	do	1 00

THE FERGUS CUP.

7. Best grade heifer, two years old on March 1, 1861, or under, the produce of a pure bred Durham Bull, and of a cow at least one-half pure bred, Prize presented by Hon. A. Ferguson,—SILVER CUP.

8. Extra Entries.

DIPLOMAS will be awarded to the *breeders* or *importers* of bulls and stallions which take *first prizes* when their names and residences are given.

The Judges shall ascertain, in deciding on bull calves in any of the foregoing classes, whether the animal has been suckled or raised by pail, and make allowances accordingly.—The exact age of young animals must be stated on the cards, and will be taken into consideration by the judges in making their awards; and any person understating the age of an animal will forfeit the premium to which he might otherwise be entitled.

A certificate to be produced to show the breeding of animals in class XII.

Young cattle may compete, if the exhibitor think fit, in an older class than that which they properly belong; but no animal will be allowed to compete in more than one of the foregoing sections.

An animal will not be allowed to compete as a three-year old cow unless it has had a calf, but a two year old animal having had a calf will be allowed to compete as a two-year old heifer, if the owner thinks fit.

Prizes will be awarded to animals of other breeds than those above mentioned, if deemed worthy.

CLASS XIII.—FAT AND WORKING CATTLE, ANY BREED.

Sect.		$	c.
1. Best fat ox or steer		30	00
2d	do	20	00
3d	do	12	00
2. Best fat cow or heifer		30	00
2d	do	20	00
3d	do	12	00
3. Best yoke of working oxen		20	00
2d	do	12	00
3d	do	8	00
4. Best yoke 8 years old steers		16	00
2d	do	10	00
3d	do	6	00
5. Best team of oxen, not less than ten yoke from one township, the property of any number of persons		40	00
6. Extra Entries.			

SHEEP.

CLASS XIV.—LEICESTERS.

1. Best ram, two shears and over		16	00
2d	do	10	00
3d	do	4	00
2. Best shearling ram		16	00
2d	do	10	00
3d	do	4	00
3. Best ram lamb		8	00
2d	do	4	00
3d	do	2	00
4. Best 2 ewes, two shears and over		16	00
2d	do	12	00
3d	do	6	00
5. Best 2 shearling ewes		12	00
2d	do	8	00
3d	do	4	00
6. Best 2 ewe lambs		6	00
2d	do	4	00
3d	do	2	00

CROSS XV—COTSWOLDS.

Prizes the same as in Class XIV.

CLASS XVI.—CHEVIOTS.

Prizes the same as in Class XIV.

CLASS XVII.—OTHER PURE BRED LONG WOOLED SHEEP, NOT LEICESTERS, COTSWOLD, OR CHEVIOTS.

Prizes the same as in Class XIV.

CLASS XVIII.—SOUTH DOWNS.

Prizes the same as in class XIV.

CLASS XIX.—MERINOS AND SAXONS.

Prizes the same as in Class XIV.

CLASS XX.—OTHER PURE BRED SHORT WOOLED SHEEP, NOT SOUTHDOWNS, MERINOS OR SAXONS.

Prizes the same in Class XIV.

CLASS XXI.—FAT SHEEP.

Sect.		$	c.
1. Best two fat wethers		12	00
2d	do	8	00
3d	do	4	00
2. Best 2 fat ewes		12	00
2d	do	8	00
3d	do	4	00
3. Extra entries in sheep.			

Sheep that have been shewn in any other class cannot compete as fat sheep.

[Sheep will not be allowed to compete with more than the present year's growth of wool upon them]

PIGS—LARGE BREEDS.

CLASS XXII.—YORKSHIRES.

1. Best Boar, 1 year and over		15	00
2d	do	10	00
3d	do	7	00
2. Best Boar, under 1 year		10	00
2d	do	6	00
3d	do	4	00
3. Best Breeding Sow 1 year and over		10	00
2d	do	7	00
3d	do	4	00
4. Best sow, under 1 year old		5	00
2d	do	4	00
3d	do	3	00

CLASS XXIII—LARGE BERKSHIRES.

Prizes the same as in Class XXII.

CLASS XXIV—ALL OTHER LARGE BREEDS.

Prizes the same as in Class XXII.

PIGS—SMALL BREEDS.

CLASS XXV—SUFFOLKS.

Prizes the same as in Class XXII.

CLASS XXVI—IMPROVED BERKSHIRES.

Prizes the same as in Class XXII.

CLASS XXVII—ALL OTHER SMALL BREEDS.

Prizes the same as in Class XXII.

In the classes of Pigs, the *precise age* of the animal is to be *stated on the cards.*

With a view of encouraging largely the importation of improved stock, the exhibitor of any male animal imported into this Province from Europe since the last Exhibition, which shall take the first prize in any of the above classes, will be paid three times the amount of the premium offered in the list; the exhibitor of any female animal imported from Europe within the same time taking the first prize will be paid double the amount offered; the exhibitor of any male animal imported into the Province from any part of America within the same time, taking the first prize, will be paid double the amount of prize offered; and of any female animal imported within the same time, and taking the first prize, one-half addition to the amount of prize offered in the list. Such animals to be the *bona fide* property of persons residing in Upper Canada. Satisfactory evidence must have been given at the time of making the entry that the animal has been imported within the time named, or the increased prize will not be paid.

CLASS XXVIII.—POULTRY, &C.

Sect.	$ c.
1. Best pair of white dorkings	4 00
2d do	2 00
2. Best pair of spangled do.	4 00
2d do	2 00
3. Best pair of black Polands.	4 00
2d do	2 00
4. Best pair of white Polands	4 00
2d do	2 00
5. Best pair of golden Polands	4 00
2d do	2 00
6. Best pair of silver Polands	4 00
2d do	2 00
7. Best pair of game fowls	4 00
2d do	2 00
8. Best pair of Jersey blues	4 00
2d do	2 00
9. Best pair of Cochin China, Shanghai, Canton, or Bramah Pootra fowls	4 00
2d do	2 00
10. Best pair of black Spanish fowls	4 00
2d do	2 00
11. Best pair of black Java fowls	4 00
2d do	2 00
12. Best pair Bolton grays	4 00
2d do	2 00
13. Best pair of Bolton bays	4 00
2d do	2 00
14. Best pair of Hamburg fowls	4 00
2d do	2 00
15. Best pair of Dominique	4 00
2d do	2 00
16. Best pair of feathered-legged bantams	2 00
2d do	1 00
17. Best pair of smooth-legged bantams	2 00
2d do	1 00
18. Best pair of turkeys (white or colored)	4 00
2d do	2 00
19. Best pair of wild turkeys	4 00
2d do	2 00
20. Best pair of large geese	4 00
2d do	2 00
21. Best pair of Bremen geese	4 00
2d do	2 00
22. Best pair of Chinese geese	4 00
2d do	2 00
23. Best pair of Muscovy ducks	4 00
2d do	2 00
24. Best pair of common ducks	4 00
2d do	2 00
25. Best pair of Aylesbury ducks	4 00
2d do	2 00
26. Best pair of Poland ducks	4 00
2d do	2 00
27. Best pair of Rouen ducks	4 00
2d do	2 00
28. Best pair of Guinea fowls	4 00
2d do	2 00
29. Best pair of pea fowls	4 00
2d do	2 00
30. Best collection of pigeons	4 00
2d do	2 00
31. Best lot of poultry, in one pen, and owned by the exhibitor	6 00
32. Best collection of poultry entered in the various classes by one exhibitor	8 00
33. Best pair of rabbits	2 00
34. Best lot of rabbits	4 00

THE FERGUS MEDALS.

35. Best pair (Cock and Hen) of Domestic Fowls, prize by Hon. Adam Ferguson	Silver Medal.
2d do	Silver Medal.
36. Other entries.	

Exhibitors will have to provide their own coops, and are recommended to have them about three feet cube in size, for convenience of arrangement on the grounds.

XXIX.—FOREIGN STOCK.

1. Best stallion for agricultural purposes, diploma and	12 00
2d do	12 00
2. Best blood stallion, diploma and	12 00
2d do	12 00
3. Best Durham bull, diploma and	10 00
2d do	10 00
4. Best Durham cow, diploma and	6 00
2d do	6 00
5. Best Ayrshire bull, diploma and	10 00
2d do	10 00
6. Best Ayrshire cow, diploma and	6 00
2d do	6 00
7. Best Hereford bull, diploma and	10 00
2d do	10 00
8. Best Hereford cow, diploma and	6 00
2d do	6 00
9. Best Devon bull, diploma and	10 00
2d do	10 00
10. Best Devon cow, diploma and	6 00
2d do	6 00
11. Best Leicester ram, diploma and	6 00
2d do	6 00
12. Best 2 Leicester ewes, diploma and	6 00
2d do	6 00
13. Best Southdown ram, diploma and	6 00
2d do	6 00
14. Best 2 Southdown ewes, dipl. and	6 00
2d do	6 00
15. Best Merino or Saxon ram, diploma and	6 00
2d do	6 00
16. Best 2 Merino or Saxon ewes, diploma and	6 00
2d do	6 00
17. Best boar, diploma and	6 00
2d do	6 00
18. Best breeding sow, diploma and	6 0
2d do	6 00
19. Extra entries in Foreign Stock.	

AGRICULTURAL PRODUCTIONS.

CLASS XXX —GRAINS, SEED, &C.

The Canada Company's prize	100 00

Sect.		$ c
1.	For the best 25 bushels of Fall Wheat, the produce of Canada West, being the growth of the year 1861. Each sample must be of one distinct variety, pure and unmixed, of the best quality for seed, and not to be tested merely by weight. Theprize to be awarded to the actual grower only of the Wheat, which is to be given up and become the property of the Association, for the distribution to the County Societies for SEED.	
2d	do by the Association.	40 00
3d	do	20 00

The winners of the 2d and 3d prizes to retain their wheat.

This wheat will be ready for distribution after the annual meeting. The delegates from such County Societies as desire to have a portion are requested to apply for it, and take it with them from the show ground, for immediate sowing, where practicable.

The winners of these prizes will be required to furnish the Secretary with a written statement of the nature of the soil, mode of preparation, the variety and quantity of seed, and time of sowing, manures, (if any used), produce per acre of grain, and any other particulars of practical importance, before being paid the amount of premium. Winners of prizes in the succeeding sections of this class will also be expected to furnish information when applied for.

2.	Best two bushels of winter wheat	10 00
2d	do	8 00
3d	do	6 00
4th	do	4 00
3.	Best two bushels spring wheat	10 00
2d	do	8 00
3d	do	6 00
4th	do	4 00
4.	Best 2 bushels of barley (two rowed)	6 00
2d	do	4 00
3d	do	2 00
4th	do.....Vol. Transactions.	
5.	Best 2 bushels of barley (6 rowed)	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
6.	Best two bushels rye	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
7.	Best two bushels of oats (wh)...ite	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
8.	Best two bushels of oats (black)	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
9.	Best two bushels of field peas	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
10.	Best two bus. of marrow fat peas	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
11.	Best two bushels tares	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
12.	Best bushel of white field beans	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
13.	Best two bushels Indian corn in the ear (white)	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
14.	Best two do [yellow]	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
15.	Best bushel of timothy seed	6 00
2d	do	4 00
3d	do	2 00
4th	do	Trans.
16.	Best bushel clover seed	6 00
2d	do	4 00
3d	do	2 00
17.	Best half bushel Alsike clover seed	6 00
2d	do	4 00
3d	do	2 00
18.	Best bushel hemp seed	6 00
2d	do	4 00
3d	do	2 00
19.	Best bushel flax seed	6 00
2d	do	4 00
3d	do	2 00
20.	Best bushel mustard seed	6 00
2d	do	4 00
3d	do	2 00
21.	Best Swedish turnip seed, from transplanted bulbs, not less than 20 lbs	6 00
2d	do	4 00
3d	do	2 00
22.	Best 14 lbs field carrot seed	6 00
2d	do	4 00
3d	do	2 00
23.	Best 12 lbs mangel wurzel seed	6 00
2d	do	4 00
3d	do	2 00
24.	Best bale of hops, not less than 112 lbs	20 00
2d	do	12 00
3d	do	8 00
25.	Best bushel horse or tick beans	6 00
2d	do	3 00
3d	do	Trans.

Sect.		$ c.
26. Best bushel buckwheat		4 00
2d	do	2 00
3d	do	Trans.
27. Best bushel Millet		4 00
2d	do	2 00
3d	do	Trans.
28. Best bushel of Hungarian grass seed		4 00
2d	do	2 00
3d	do	Trans.

29. Special Prizes for Fall Wheat from Counties.—With the view of obtaining and having in possession of the Board specimens of fall wheat from every quarter of the Province, each County Society is invited to procure and send to the exhibition, one bushel of fall wheat, of the best quality obtainable, the growth of their county in the present year; and for these samples the following prizes are offered:

For the best bushel	$5 00
For the 2nd best	4 00
For the 3rd best	3 00
For the 4th best	2 00
For each of all the other samples	1 50

The wheat to be the property of the Board. Each County Society to send but one sample; each sample to be marked with the name of the County Society, and with the name of the wheat exhibited, and to compete only in this one section. No entry fee will be charged, and the entry book will be kept open for this purpose till the meeting of delegates, when the samples will be judged.

29. Extra entries.

CLASS XXXI.—ROOTS AND OTHER FIELD CROPS.

1. Best bushel pink-eyed potatoes		3 00
2d	do	2 00
3d	do	1 00
2. best bushel cup potatos		3 00
2d	do	2 00
3d	do	1 00
3. Best bushel goldfinders		3 00
2d	do	2 00
3d	do	Trans.
4. Best bushel white potatos		3 00
2d	do	2 00
3d	do	Trans.
5. Best bushel red do		3 00
2d	do	2 00
3d	do	Trans.
6. Best bushel blue do		3 00
2d	do	2 00
3d	do	Trans.
7. Best bushel of any other sort		3 00
2d	do	2 00
3d	do	Trans.
8. Best bushel Swede turnips		3 00
2d	do	2 00
3d	do	1 00
9. Best bushel white globe turnips		00
2d	do	2 00
3d	do	Trans.
10. Best bushel Aberdeen yellow turnips		3 00
2d	do	2 00
3d	do	Trans.
11. Best 20 roots red carrots		3 00
2d	do	2 00
3d	do	1 00
12. Best 20 roots white or Belgian carrots		3 00
2d	do	2 00
3d	do	1 00
13. Best 12 roots mangel wurzel(long red)		3 00
2d	do	2 0 0
3d	do	1 00
14. Best 12 roots red globe mangel wurzel		3 00
2d	do	00
3d	do	Trans.
15. Best 12 roots yellow globe mangel wurzel		3 00
2d	do	2 00
3d	do	1 00
16. Best 12 roots long yellow mangel wurzel		3 00
2d	do	2 00
3d	do	Trans.
17. Best 12 roots of khol rabi		3 00
2d	do	2 00
3d	do	1 00
18. Best 12 roots of sugar beet		3 00
2d	do	2 00
3d	do	1 00
19. Best 20 roots parsnips		3 00
2d	do	2 00
3d	do	Trans.
20. Best 20 roots of chicory		3 00
2d	do	2 00
3d	do	Trans.
21. Best 2 large squashes for cattle		3 00
2d	do	2 00
3d	do	1 00
22. Best two mammoth field pumpkins		3 00
2d	do	2 00
3d	do	Trans.
23. Best four common yellow field do		3 00
2d	do	2 00
3d	do	Trans.
24. Best 20 lbs of tobacco leaf, growth of Canada West		3 00
2d	do	2 00
3d	do	Trans.
25. Best broom corn brush, 28 lbs		3 00
2d	do	2 00
3d	do	Trans.

The Canada Company's prize for Flax.

26. Best 112 lbs of flax, scutched		24 00
2d	do. by the Association	16 00
3d	do do do	8 00

The Canada Company's Prize for Hemp.

27. Best 112 lbs. of Hemp		16 00
2d	do by the Association	12 00
3d	do do do	6 00

28. Other entries.

[The Roots in the above class to be certified as of field culture by the Exhibiter.]

Roots of other varieties than those above named will receive prizes if worthy.

The names of the different varieties of wheat or other grain, roots, &c., must be inserted by each exhibiter in his list of entries.

HORTICULTURAL PRODUCTS.

CLASS XXXII.—FRUIT.

Sect.		$ c.
1. Best 20 varieties of apples, named, [six of each]		5 00
2d	do	4 00
3d	do	3 00
2. Best 12 table apples, named, [Fall sort]		3 00
2d	do	2 00
3d	do	1 00
3. Best 12 table apples, named, [winter sort]		3 00
2d	do	2 00
3d	do	1 00
4. Best 12 baking apples, named, [fall]		3 00
2d	do	2 00
3d	do	1 00
5. Best 12 Bakinfi apples, [Winter]		3 00
2d	do	2 00
3d	do	1 00
6. Best 20 varieties of pears, named [three of each]		5 00
3d	do	4 00
3d	do	3 00
7. Best 12 table pears, named [Fall sort]		3 00
2d	do	2 00
3d	do	1 00
8. Best 12 table pears, named [Winter sort]		3 00
2d	do	2 00
3d	do	1 00
9. Best 12 plums, [Dessert]		3 00
2d	do	2 00
3d	do	1 00
10. Best 12 baking plums, named		3 00
2d	do	2 00
3d	do	1 00
11. Best quart of Damsons [English]		3 00
2d	do	2 00
3d	do	1 00
12. Best 12 peaches grown in open air, named		3 00
2d	do	2 00
3d	do	1 00
13. Best 10 varieties of peaches, grown in open air (3 of each)		4 00
2d	do	3 00
3d	do	2 00
14. Best 12 quinces		2 00
2d	do	1 50
3d	do	Trans.
15. Best 3 clusters of golden or white grapes grown under glass		4 00
2d	do	3 00
3d	do	2 00
16. Best 3 clusters of black grapes grown under glass		4 00
2d	do	3 00
3d	do	2 00
17. Best four clusters black grapes, grown in open air		2 00
2d	do	1 50
3d	do	1 00
19. Best 4 clusters white grapes, grown in open air		2 00
2d	do	1 50
3d	do	1 00
19. Best and heaviest 2 clusters grapes, grown under glass		3 00
2d	do	2 00
3d	do	1 00
20. Best and heaviest two bunches of grapes, (open air)		3 00
2d	do	2 00
3d	do	1 00
21. Best collection of grapes, grown in open air, 2 clusters or each sort, named		4 00
2d	do	3 00
3d	do	2 00
22. Best green flesh melon		2 00
2d	do	1 50
3d	do	1 00
23. Best red or scarlet flesh melon		2 00
2d	do	1 50
3d	do	1 00
24. Best water melon		2 00
2d	do	1 50
3d	do	1 00
25. Best 6 citrons for preserving		2 00
2d	do	1 50
3d	do	Trans
26. Best 6 nectarines		2 00
2d	do	1 50
3d	do	1 00
27. Best display of fruit, the growth of exhibiter, (distinct from other entries) not more than three specimens of each sort		9 00
2d	do	6 00
3d	do	3 00
28. Extra entries.		

CLASS XXXIII.—GARDEN VEGETABLES.

1. Best 12 roots of salsify		2 00
2d	do	1 50
3d	do	1 00
2. Best 3 heads brocoli		2 00
2d	do	1 50
3d	do	1 00
3. Best 3 heads cauliflower		2 00
2d	do	1 50
3d	do	1 00

Sect.		$	c.
4. Best 3 heads cabbage (summer)		2	00
2d	do	1	50
3d	do	1	00
5. Best 3 heads cabbage (winter)		2	00
2d	do	1	50
3d	do	1	00
6. Best 4 sorts winter cabbage, including savoys, 1 of each sort		3	00
2d	do	2	00
3d	do	1	00
7. Best 3 heads red cabbage		2	00
2d	do	1	50
3d	do	1	00
8. Best 12 carrots for table, long red		2	00
2d	do	1	50
3d	do	1	00
9. Best 12 early horn carrots		2	00
2d	do	1	50
3d	do	1	00
10. Best 12 table parsnips		2	00
2d	do	1	50
3d	do	1	00
11. Best 6 roots of white celery		2	00
2d	do	1	50
3d	do	1	00
12. Best 6 roots of red celery		2	00
2d	do	1	50
3d	do	1	00
13. Best dozen capsicums (ripe)		2	00
2d	do	1	50
3d	do	1	00
14. Best collection of capsicums (ripe), six of each sort		3	00
2d	do	2	00
3d	do	1	00
15. Best 3 egg plants, purple		2	00
2d	do	1	50
3d	do	1	00
16. Best 12 tomatoes, (red)		2	00
2d	do	1	50
3d	do	1	00
17. Best 12 tomatoes, (yellow)		2	00
2d	do	1	50
3d	do	1	00
18. Best assorted collection of tomatos, 6 each of large sorts, and 12 each of small sorts		3	00
2d	do	2	00
3d	do	1	00
19. Best 12 blood beets		2	00
2d	do	1	50
3d	do	1	00
20. Best peck of white onions		2	00
2d	do	1	50
3d	do	1	00
21. Best peck of yellow onions		2	00
2d	do	1	50
3d	do	1	00
22. Best peck of red onions		2	00
2d	do	1	50
3d	do	1	00
23. Best 12 white turnips (table)		2	00
2d	do	1	50
3d	do	1	00
24. Best 12 yellow turnips, (table)		2	00
2d	do	1	50
3d	do	1	00
25. Best 12 ears sweet corn		2	00
2d	do	1	50
3d	do	1	00
26. Best and greatest variety of potatos, half peck of each sort, named		3	00
2d	do	2	00
3d	do	1	00
27. Best 3 squashes, (table)		2	00
2d	do	1	50
3d	do	1	00
28. Best and greatest variety of vegetables, (distinct from other entries) each kind named		4	00
2d	do	3	00
3d	do	2	00
29. Extra entries.			

CLASS XXXIV.—PLANTS AND FLOWERS.

1. Best dozen dahlias, named		2	00
2d	do	1	50
3d	do	1	00
2. Best and largest collection of dahlias		5	00
2d	do	4	00
3d	do	3	00
3. Best boquet of cut flowers, (for table)		2	00
2d	do	1	50
3d	do	1	00
4. Best hand bouquet		2	00
2d	do	1	50
3d	do	1	00
5. Best collection of green-house plants, not less than 12 specimens in flower		10	00
2d	do	6	00
3d	do	4	00
6. Best 12 pansies		2	00
2d	do	1	50
3d	do	1	00
7. Best 6 fuchsias, in flower		3	00
2d	do	2	00
3d	do	1	00
8. Best collection of annuals in bloom		2	00
2d	do	1	50
3d	do	1	00
9. Best 6 cockscombs		2	00
2d	do	1	50
3d	do	1	00
10. Best 6 balsams in bloom		2	00
2d	do	1	50
3d	do	1	00
11. Best collection of asters		2	00
2d	do	1	50
3d	do	1	00
12. Best collection of 10 weeks' stock		2	00
2d	do	1	50
3d	do	1	00
13. Best collection of hybrid perpetual roses, not less than 12 blooms		2	00
2d	do	1	50
3d	do	1	00
14. Best floral ornament or design		5	00
2d	do	4	00
3d	do	3	00

Sect.		$ c.
15. Best collection of verbenas, not less than 12 varieties		3 00
2d	do	2 00
3d	do	1 00
16. Best 6 petunias		2 00
2d	do	1 50
3d	do	1 00
17. Best collection perrennial phloxes.		2 00
2d	do	1 50
3d	do	1 00
18. Best 6 hardy shrubs,(spikes in flower)		2 00
2d	do	1 50
3d	do	1 00
19. Best collection of hollyhocks		2 00
2d	do	1 50
3d	do	1 00
20. Best display of plants in flower, distinct from other entries		10 00
2d	do	6 00
3d	do	4 00
21. Best collection of native plants, dried and named		5 00
2d	do	3 00
3d	do	2 00
22. Best specimen of useful and ornamental rustic work for the garden		4 00
2d	do	3 00
3d	do	2 00
23. Extra entries.		

Competitors in classes 32, 33, and 34, are requested to deliver their various productions in a clean and proper state for exhibition.

CLASS XXXV.—DAIRY PRODUCTS, &C.

1. Best firkin of butter, in shipping order, not less than 56 lbs		12 00
2d	do	10 00
3d	do	8 00
4th	do	6 00
2. Best butter, not less than 28 lbs., in firkins, crocks, or tubs		8 00
2d	do	6 00
3d	do	4 00
4th	do	2 00
3. Best cheese, not less than 30 lbs		10 00
2d	do	8 00
3d	do	6 00
4th	do	4 00
4. Best two stilton cheese, not less than 14 lbs. each		10 00
2d	do	8 00
3d	do	6 00
4th	do	4 00
5. Best honey, in the comb, not less than 10 lbs		3 00
2d	do	2 00
3d	do	1 50
4th	do	Trans
6 Best jar of clear honey		4 00
2d	do	2 00
3d	do	1 50
4th	do	Trans
7. Extra entries		

Persons taking premiums on dairy products will be required to furnish statements of the mode of manufacture, including the breed and number of cows, size of farm, description of dairy premises, treatment of milk, salt, &c., quantity of produce, and any other practical information that they may be able to afford, before being paid the amount of premium.

CLASS XXXVI.—AGRICULTURAL IMPLEMENTS, WORKED BY HORSE OR OTHER POWER.

Sect.		$ c.
1. Best iron plough, diploma and		12 00
2d	do	8 00
3d	do	4 00
2. Best wooden plough, diploma and		12 00
2d	do	8 00
3d	do	4 00

[The ploughs to be tested on the field on the Tuesday, by a Committee appointed for the purpose, at the Exhibition; ease of draught and efficiency of work to be considered.]

3. Best subsoil plough, diploma and		12 00
2d	do	8 00
3d	do	4 00
4. Best double shear trench plough		10 00
2d	do	6 00
3d	do	4 00
5- Best double mould plough		10 00
2d	do	6 00
3d	do	4 00
6. Best pair of harrows		6 00
2d	do	4 00
3d	do	2 00
7. Best horse-power thresher and separator, diploma and		20 00
2d	do	12 00
3d	do	8 00
8. Best grain drill, diploma and		12 00
2d	do	8 00
3d	do	4 00
9. Best straw cutter		5 00
2d	do	4 00
3d	do	3 00
10. Best smut machine		6 00
2d	do	3 00
11. Best portable grist mill		12 00
2d	do	8 00
3d	do	4 00
12. Best grain cracker		8 00
2d	do	6 00
3d	do	4 00
13. Best corn and cob crusher		4 00
2d	do	3 00
3d	do	2 00
14. Best clover cleaning machine		12 00
2d	do	8 00
3d	do	4 00
15. Best cider mill and press		12 00
2d	do	8 00
16. Best two-horse waggon		12 00
2d	do	8 00
3d	do	4 00
17. Best one-horse light wagon		10 00
2d	do	8 00
3d	do	4 00

Sect.		$ c.
18. Best horse cart		6 00
2d	do	4 00
3d	do	2 00
19. Best farm sleigh		8 00
2d	do	4 00
3d	do	2 00
20. Best horse rake		4 00
2d	do	3 00
3d	do	2 00
21. Best metal roller		11 00
2d	do	8 00
22. Best wooden roller		10 00
2d	do	5 00
23. Best stump extractor		8 00
2d	do	4 00
24. Best reaping machine, diploma and		20 00
2d	do	12 00
3d	do	8 00
25. Best mowing machine, diploma and		20 00
2d	do	12 00
3d	do	8 00
26. Best combined mover and reaper, diploma and		20 00
2d	do	12 00
3d	do	8 00
27. Best potato digger		3 00
2d	do	2 00
3d	do	Trans
28. Best field or two-horse cultivator		12 00
2d	do	8 00
3d	do	4 00
29. Best horse hoe, or single horse cultivator		4 00
2d	do	3 00
30. Best post hole borer		12 00
2d	do	8 00
31. Best brick making machine		10 00
2d	do	6 00
32. Best flax dressing machine		30 00
2d	do	20 00
3d	do	10 00
33. Best machine for sinking field drains and laying in and covering tiles.		60 00
2d	do	40 00
34. Best Steam Plough or Cultivator, in operation on the ground, (open to foreign competition		100 00
35. Extras.		

CLASS XXXVII.—AGRICULTURAL TOOLS AND IMPLEMENTS, CHIEFLY FOR HAND USE.

1. Best fanning mill, diploma and		6 00
2d	do	4 00
3d	do	2 00
2. Best steel drill or barrow		4 00
2d	do	3 00
3d	do	2 00
3. Best straw cutter		5 00
2d	do	4 00
3d	do	3 00
4. Best machine for cutting roots for stock		6 00
2d	do	4 00
	do	2 00
5. Best cheese press		8 00
2d.	do	6 00
6. Best churn		3 00
2d	do	2 00
7. Best garden walk or lawn roller		4 00
2d	do	2 00
3d	do	1 00
8. Best thistle extractor		2 00
2d	do	1 00
3d	do	Trans
9. Best farm gate		3 00
2d	do	2 00
3d	do	Trans
10. Best specimen farm fence, of wood.		3 00
2d	do	2 00
3d	do	Trans
11. Best specimen wire fencing, not less than two rods, erected on the ground		8 00
2d	do	6 00
3d	do	4 00
12. Best wooden pump		4 00
2d	do	3 00
13. Best half-dozen hay rakes		3 00
2d	do	2 00
3d	do	1 00
14. Best half-dozen manure forks		3 00
2d	do	2 00
3d	do	1 00
15. Best half-dozen hay forks		3 00
2d	do	2 00
3d	do	1 00
16. Best half-dozen scythe snaiths		3 00
2d	do	2 00
3d	do	1 00
17. Best ox-yoke and bows		2 00
2d	do	1 00
3d	do	Trans
18. Best grain cradle		2 00
2d	do	1 00
19. Best half-dozen grain shovels		3 00
2d	do	2 00
3d	do	1 00
20. Best half-dozen iron, (flat) shovels.		3 00
2d	do	2 00
3d	do	1 00
21. Rest half-dozen spades		3 00
2d	do	2 00
3d	do	1 00
22. Best half-dozen steel hoes		3 00
2d	do	2 00
3d	do	1 00
23. Best half-dozen grass scythes		3 00
2d	do	2 00
3d	do	1 00
24. Best half-dozen cradle scythes		3 00
2d	do	2 00
3d	do	1 00
25. Best machine for making drain tiles dip. and		10 00
2d	do	6 00
26. Best set of draining tools		6 00
2d	do	4 00
3d	do	2 00
27. Best straw fork, wood		2 00
2d	do	1 00
3d	do	Trans

Sect.	$ c.
28. Best implement or machine for cuting, pulling, or otherwise harvesting peas, hand or horse power	10 00
2d do	5 00
29. Extra entries.	

CLASS XXXVIII.—CATTLE FOOD—MANURES, AND MISCELLANEOUS.

1. Best specimen oil cake	4 00
2d do	2 00
2. Best specimen prepared food for cattle	4 00
2d do	2 00
3. Best specimen ground bones for manure	4 00
2d do	2 00
4. Best specimen other artifical manure	4 00
2d do	2 00
5. Extras.	

CKASS XXXIX.—FOREIGN AGRICULTURAL IMPLEMENTS.

Foreign manufactured implements will be admitted for exhibition only; but diplomas will be awarded to those of particular merit.

DEPARTMENT SECOND.

Arts, Manufactures, Ladies' Work, &c.

CLASS XL —ARCHITECTURE AND MISCELLANEOUS USEFUL AND DECORATIVE ARTS.

1. Best Architectural Drawing	6 00
2d do	4 00
2. Best Architectural Drawing in perspective	6 00
2d do	4 00
3. Best Composition Drawing of Natural Foliage (Canadian), applicable to architectural details	7 00
2d do	5 00
4. Best Modelling in Plaster of Natural Foliage (Canadian), applicable to architectural details	7 00
2d do	5 00
5. Best collection of Mathematical, Philosopical, and Surveyor's Instruments	10 00
2d do	6 00
6. Best specimens Stained Glass	6 00
2d do	4 00
7. Best model of system of Ventilating, Warming, and distributing the air in Buildings	10 00
2d do	6 00
8. Best Banner Painting	6 00
2d do	4 00
9. Best Carving and Gilding	6 00
2d do	4 00
10. Best Carving in Wood	6 00
2d do	4 00
11. Best Carving in Stone	6 00
2d do	4 00
12. Best Drawing of Machinery, in perspective	5 00
2d do	3 00
13. Best Decorative House Painting	5 00
2d do	3 00
14. Best specimens Dentistry	5 00
2d do	3 00
15. Best Engraving on Wood, with proof	5 00
2d do	3 00
16. Best Engraving on Copper, with proof	5 00
2d do	3 00
17. Best Engraving on Steel, with proof	5 00
2d do	3 00
18. Best specimens Electrotyping	5 00
2d do	3 00
19. Best Goldsmith's Work	5 00
2d do	3 00
20. Best Geometrical Drawing of Engine or Millwright Work, coloured	5 00
2d do	3 00
21. Best Heraldic Painting	5 00
2d do	3 00
22. Best Lithographic Drawing	5 00
2d do	3 00
23. Best Lithographic Drawing, colored	6 00
2d do	4 00
24. Best Lithographic Drawing, on Canadian Stone	5 00
2d do	3 00
25. Best Modelling in Plaster	6 00
2d do	4 00
26. Best Monumental Tomb or Head Stone	6 00
2d do	4 00
27. Best Painting, in imitation of woods and marbles	5 00
2d do	3 00
28. Best Picture Frame, ornamented gilt	5 00
2d do	3 00
29. Best Picture Frame, plain gilt	4 00
2d do	2 00
30. Best Seal Engraving, with wax impressions	6 00
2d do	4 00
31. Best Silversmith's Work	5 00
2d do	3 00
32. Extra entries	

CLASS XLI.—CABINET WARE AND OTHER WOODEN MANUFACTURES.

1. Best Set Bed-Room Furniture	8 00
2d do	6 00
2. Best Centre Table	6 00
2d do	4 00
3. Best Drawing-Room Sofa	7 00
2d do	5 00
4. Best Set Drawing-Room Chairs	7 00
2d do	5 00
5. Best Set Dining-Room Furniture	8 00
2d do	6 00
6. Best Ottoman	3 00
2d do	2 00
7. Best Side-Board	6 00
2d do	4 00
8. Best School Desk and Chairs	3 00
2d do	2 00
9. Best Wardrobe	4 00
2d do	3 00
10. Best Six Corn Brooms	2 00
2d do	1 00
11. Best Cooper's Work	3 00
2d do	2 00

Sect.		$ c.
12.	Best Curled Hair, 10 lbs	3 00
	2d do	2 00
13.	Best Door, 4 or 6 panelled	3 00
	2d do	2 00
14.	Best three Flour Barrels	3 00
	2d do	2 00
15.	Best collection Handles for Tools, for carpenters, blacksmiths, gunsmiths, watchmakers, &c	8 00
	2d do	5 00
16.	Best specimen Joiner's Work	4 00
	2d do	3 00
17.	Best Machine-wrou't Moulding, 100 ft.	3 00
	2d do	2 00
18.	Best Machine-wrou't Flooring, 100 ft.	3 00
	2d do	2 00
19.	Best Shingles, two bundles split	3 00
	2d do	2 00
20.	Best specimens Turning in Wood	5 00
	2d do	3 00
21.	Best Veneers from Canadian Woods	5 00
	2d do	3 00
22.	Best Wash-tubs and Wooden Pails three of each	3 00
	2d do	2 00
23.	Best Window Sash hung in Frame, 12 lights	4 00
	2d do	3 00
24.	Best Six Wash-boards, zinc covered	2 00
	2d do	1 00
25.	Best Willow Ware	3 00
	2d do	2 00
26.	Extra entries	

CLASS XLII.—CARRIAGES AND SLEIGHS, AND PARTS THEREOF.

1.	Best Axle, wrought iron	3 00
	2d do	2 00
2.	Best Six Bent Shafts	3 00
	2d do	2 00
3.	Best Buggy, double seated	6 00
	2d do	4 00
4.	Best Buggy, single seated	5 00
	2d do	3 00
5.	Best pleasure Carriage, two horse	10 00
	2d do	6 00
6.	Best pleasure Carriage, one horse	7 00
	2d do	5 00
7.	Best Child's Carriage	3 00
	2d do	2 00
8.	Best Dog Cart, single horse	5 00
	2d do	3 00
9.	Best two pairs of Carriage Hubs	3 00
	2d do	2 00
10.	Best two pairs of Carriage Rims or Felloes	3 00
	2d do	2 00
11.	Best one dozen machine-made Carriage Spokes	3 00
	2d do	2 00
12.	Best pleasure Sleigh, two horse	7 00
	2d do	5 00
13.	Best pleasure Slegh, one horse	6 00
	2d do	4 00
14.	Best Set Steel Carriage Springs,	3 00
	2d do	2 00
15.	Best pair of Carriage Wheels, unpainted	4 00
	2d do	3 00
16.	Extras	

CLASS XLIII.—CHEMICAL MANUFACTURES AND PREPARATIONS.

1.	Best Blacking for Shoes	2 00
	2d do	1 00
2.	Best assortment Essential Oils	6 00
	2d do	4 00
3.	Best Glue, 14 lbs	3 00
	2d do	2 00
4.	Best Isinglass, 1 lb	3 00
	2d do	2 00
5.	Best Medicinal Herbs, Roots, and Plants, native growth	7 00
	2d do	5 00
6.	Best Oils, extracted from Plants	3 00
	2d do	2 00
7.	Best Oils, Linseed and Rape	3 00
	2d do	2 00
8.	Best Oil, Coal, Shale, or Rock	4 00
	2d do	3 00
9.	Best assortment Varnishes	4 00
	3d do	3 00
10.	Extra entries	

CLASS XLIV.—FINE ARTS.

Professional List—Oil.

1.	Best Animals, grouped or single	10 00
	2d do	6 00
2.	Best Historical Painting, Canadian subject	10 00
	2d do	6 00
3.	Best Landscape, Canadian subject	10 00
	2d do	6 00
4.	Best Marine Painting, Canadian sub.	10 00
	2d do	6 00
5.	Best Original Composition, any other subject	10 00
	2d do	6 00
6.	Best Portrait	8 00
	2d do	5 00

In Water Colours.

7.	Best Animals, grouped or single	7 00
	2d do	5 00
8.	Best Flowers, grouped or single	7 00
	2d do	3 00
9.	Best Landscape, Canadian subject	7 00
	2d do	5 00
10.	Best Marine View, Canadian subject	7 00
	2d do	5 00
11.	Best Miniature Portrait	6 00
	2d do	4 00
12.	Best other Original Composition	7 00
	2d do	5 00

Pencil, Crayon, &c.

Sect.		$ c.
13. Best Crayon, coloured		5 00
2d	do	3 00
14. Best Crayon, plain		5 00
2d	do	3 00
15. Best Pencil Drawing		5 00
2d	do	3 00
16. Best Pen and Ink Sketch		5 00
2d	do	3 00
17. Best Portrait in Pencil		5 00
2d	do	3 00
18. Best Portrait in Crayon		5 00
2d	do	3 00

Amateur List—Oil.

19. Best Animals, grouped or single		7 00
2d	do	5 00
20. Best Historical Painting, Canadian subject		7 00
2d	do	5 00
21. Best Landscape, Canadian subject		7 00
2d	do	5 00
22. Best Marine Painting, Canadian sub.		7 00
2d	do	5 00
23. Best other Original Composition		7 00
2d	do	5 00
24. Best Portrait		6 00
2d	do	4 00

In Water Colours.

25. Best Animals, grouped or single		6 00
2d	do	4 00
26. Best Flowers, grouped or single		4 00
2d	do	3 00
27. Best Landscape, Canadian subject		6 00
2d	do	4 00
28. Best Marine View, Canadian subject		6 00
2d	do	4 00
29. Best Miniature Portrait		4 00
2d	do	3 00
30. Best other Original Composition		6 00
2d	do	4 00

Pencil, Crayon, &c.

31. Best Crayon, coloured		4 00
2d	do	3 00
32. Best Crayon, plain		4 00
2d	do	3 00
33. Best Pencil Drawing		4 00
2d	do	3 00
34. Best Pen and Ink Sketch		4 00
2d	do	3 00
35. Best Portrait in Pencil		4 00
30 2d	do	3 00
36. Best Portrait in Crayon		4 00
2d	do	3 00

Photography.

37. Best collection Ambrotypes		5 00
2d	do	3 00
38. Best Photograph Portraits, coloured		7 00
2d	do	5 00
39. Best Photograph Portraits, plain		6 00
2d	do	4 00
40. Best Phot. Landscapes and Views		7 00
2d	do	5 00
41. Best Photograph Portraits in Oil		6 00
2d	do	4 00
42. Extras		

CLASS XLV.—FURS AND WEARING APPAREL.

1. Best Business Coat		4 00
2d	do	3 00
2. Best Fur Cap		3 00
2d	do	2 00
3. Best Fur Gloves, Mits, or Gauntlets		3 00
2d	do	2 00
4. Best Fur Sleigh Robe		4 00
2d	do	3 00
5. Best Gloves and Mits, buckskin		2 00
2d	do	1 00
6. Best Gloves and Mits, of any other leather		2 00
2d	do	1 00
7. Best Gloves and Mits, lined with wool		2 00
2d	do	1 00
8. Best Overcoat		4 00
2d	do	3 00
9. Best Pantaloons		3 00
2d	do	2 00
10. Best Silk Hat		3 00
2d	do	2 00
11. Best Suit of Clothes of Canadian Cloth		5 00
2d	do	3 00
12. Extra entries		

CLASS XLVI.—GROCERIES AND PROVISIONS.

1. Best Barley, Pot and Pearl		3 00
2d	do	2 00
2. Best assortment Biscuits		4 00
2d	do	3 00
3. Best lot Bottled Fruits		3 00
2d	do	2 00
4. Best lot Bottled Pickles		3 00
2d	do	2 00
5. Best Buckwheat Flour		3 00
2d	do	2 00
6. Best assortment Candles		3 00
2d	do	2 00
7. Best Cayenne Pepper, from capsicums grown in the Province		2 00
2d	do	1 00
8. Best Chickory, 20 lbs		3 00
2d	do	2 00
9. Best assortment Confectionery		4 00
2d	do	3 00
10. Best Indian Corn Meal		3 00
2d	do	2 00
11. Best jar Mustard		3 00
2d	do	2 00
12. Best Oatmeal		3 00
2d	do	2 00
13. Best six kinds Preserves		3 00
2d	do	2 00

Sect.	$ c.
14. Best can Preserved Meats	3 00
2d do	2 00
15. Best Sauces for table use	3 00
2d do	2 00
16. Best 28 lbs Soap	3 00
2d do	2 00
17. Best assortment Fancy Soaps	4 00
2d do	00
18. Best Starch, 12 lbs of Corn	2 00
2d do	1 00
19. Best Starch, 12 lbs of Flour	2 00
2d do	1 00
20. Best Starch, 12 lbs of Potato	2 00
2d do	1 00
21. Best Sugar, 20 lbs of Beet Root	3 00
2d do	2 00
22. Best Sugar, 20 lbs of Corn Stalk	3 00
2d do	2 00
23. Best Sugar, 20 lbs Maple	3 00
2d do	2 00
24. Best Sugar, one loaf of refined	3 00
2d do	2 00
25. Best 14 lbs Canadian Manufactured Tobacco	3 00
2d do	2 00
26. Best Wheat Flour	4 00
2d do	3 00
27. Extra entries	

CLASS XLVII.—INDIAN WORK.

1. Best Bark Canoe	4 00
2d do	2 00
2. Best plain Buckskin Mittens	2 00
2d do	1 00
3. Best Clothes Basket	2 00
2d do	1 00
4. Best deer skin, dressed	1 00
2d do	2 00
5. Best fruit basket	2 00
2d do	1 00
6. Best hand basket	2 00
2d do	1 00
7. Best Indian cradle	3 00
2d do	2 00
8. Best pair of plain moccasins	2 00
2d do	1 00
9. Best pair moccasins, worked with porcupine quills	3 00
2d do	2 00
10. Best pair moccasins, worked with beads	3 00
2d do	2 00
11. Best two Paddles	3 00
2d do	2 00
12. Best Pipe of Peace	2 00
2d do	1 00
13. Best 14 lbs Wild Rice	3 00
2d do	2 00
14. Best pair Snow Shoes, common size	3 00
2d do	2 00
15. Best pair Snow Shoes, eight inches long	3 00
2d do	2 00

Sect.	$ c.
16. Best 14 lbs. Sugar	3 00
2d do	2 00
17. Best Tobacco Pouch worked with Porcupine quills	2 00
2d do	1 00
18. Extra entries	

XLVIII.—LADIES' WORK.

1. Best Bonnet of Canadian Straw	4 00
2d do	3 00
2. Best Braiding	4 00
2d do	3 00
3. Best Crochet Work	4 00
2d do	3 00
4. Best Embroidery in Muslin	4 00
2d do	3 00
5. Best Embroidery in Silk	4 00
2d do	3 00
6. Best Embroidery in Worsted	4 00
2d do	3 00
7. Best three pairs Gloves	3 00
2d do	2 00
8. Best Guipure Work	4 00
2d do	3 00
9. Best Hat of Canadian Straw	4 00
2d do	3 00
10. Best Knitting	4 00
2d do	3 00
11. Best Lace Work	4 00
2d do	3 00
12. Best three pairs Woolen Mittens	3 00
2d do	2 00
13. Best Needle Work, ornamental	4 00
2d do	3 00
14. Best Fancy Netting	4 00
2d do	3 00
15. Best Quilts in Crochet	4 00
2d do	3 00
16. Best Quilts in knitting	4 00
2d do	3 00
17. Best Quilts in Silk	4 00
2d do	3 00
18. Best Quilts in piece work	4 00
2d do	3 00
19. Best Gentleman's shirt	3 00
2d do	2 00
20. Best three pairs Woollen Socks	3 00
2d do	2 00
21. Best three pairs Woollen Stockings	3 00
2d do	2 00
22. Best Tatting	4 00
2d do	3 00
23. Best Wax Fruit	5 00
2d do	3 00
24. Best Wax Flowers	5 00
2d do	3 00
25. Best Worsted Work	4 00
2d do	3 00
26. Best Worsted Work (raised)	4 00
2d do	3 00
27. Extra entries.	

CLASS XLIX.—MACHINERY AND MODELS THEREOF, CASTINGS AND TOOLS.

Sect.		$ c.
1.	Best Castings for General Machinery	6 00
	2d do	4 00
2.	Best Cast Wheel, spur or bevel, not less than 50 lbs.	4 00
	2d do	3 00
3.	Best Castings for Railways, Railroad Cars and Locomotives	10 00
	2d do	6 00
4.	Best Steam engine, of one to four horse power, in operation on the ground	15 00
	2d do	10 00
5.	Best Hot air Engine, one to four horse power, in operation on the ground	15 00
	2d do	10 00
6.	Best Fire Engine	12 00
	2d do	8 00
7.	Best Model in Metal of Engine, Millwright's work, or Machinery	7 00
	2d do	5 00
8.	Best metal Pump	4 00
	2d do	3 00
9.	Best Refrigerator, (price considered)	4 00
	2d do	3 00
10.	Best Platform Scales	4 00
	2d do	3 00
11.	Best Counter Scales	3 00
	2d do	2 00
12.	Best Smoke consuming Furnace in operation on the ground	10 00
	2d do	6 00
13.	Best Turning Lathe	5 00
	2d do	3 00
14.	Best Valves and Gearing for working steam expansively, either in model or otherwise, principle of working to be the point of competition	12 00
	2d do	8 00
	Tools.	
15.	Best assortment of Augers	3 00
	2d do	2 00
16.	Best Earth Augers	2 00
	2d do	1 00
17.	Best six chopping axes	3 00
	2d do	2 00
18.	Best set of Brace Bits	3 00
	2d do	2 00
19.	Best set of Bench Planes	3 00
	2d do	2 00
20.	Best Blacksmith's Bellows	3 00
	2d do	2 00
21.	Best set of Cooper's Tools	3 00
	2d do	2 00
22.	Best assortment of Edge Tools	12 00
	2d do	8 00
23.	Best Moulding Planes and Plows	3 00
	2d do	2 00
24.	Best assortment Weaver's Reeds	2 00
	2d do	1 00
25.	Extra Entries.	

L.—METAL WORK, PLAIN AND ORNAMENTAL, INCLUDING STOVES.

Sect.		$ c.
1.	Best assortment of Coal Oil Lamps	5 00
	2d do	3 00
2.	Best assortment Coppersmith's Work	5 00
	2d do	3 00
3.	Best assortment of Fire Arms	5 00
	2d do	3 00
4.	Best collection of Cast Steel Files	3 00
	2d do	2 00
5.	Best Finishing in Iron, vice work	3 00
	2d do	2 00
6.	Best Fire Proof Office Safe	6 00
	2d do	4 00
7.	Best assortment of Gas-Fittings	6 00
	2d do	4 00
8.	Best set of Horse Shoes	2 00
	2d do	1 00
9.	Best Iron Fencing, and Gate, ornamental	6 00
	2d do	4 00
10.	Best Iron Work from the Hammer	5 00
	2d do	3 00
11.	Best Iron Work, ornamental cast	5 00
	2d do	3 00
12.	Best assortment Locksmith's work	5 00
	2d do	3 00
13.	Best Malleable Iron from the ore	5 00
	2d do	3 00
14.	Best Malleable Iron from scrap iron.	5 00
	2d do	3 00
15.	Best Nails, 20lbs of pressed	5 00
	2d do	3 00
16.	Best Nails, 20lbs of cut	5 00
	2d do	3 00
17.	Best Ornamental Fencings for Burial Plots in Cemeteries	6 00
	2d do	4 00
18.	Best assortment Plumber's Work	5 00
	2d do	3 00
19.	Best assortment Screws and Bolts	5 00
	2d do	3 00
20.	Best assortment Sheet Brass Work	5 00
	2d do	3 00
21.	Best assortment Tinsmith's Work	5 00
	2d do	3 00
22.	Best assortment of Tinsmith's Lacquered Work	5 00
	2d do	3 00
23.	Best assortment of Wire Work	6 00
	2d do	4 00
	Stoves.	
24.	Best Cooking Stove for wood, with furniture	5 00
	2d do	3 00
25.	Best Cooking Stove for coal, with furuiture	5 00
	2d do	3 00
26.	Best Hall Stove for wood	4 00
	2d do	2 00
27.	Best Hall Stove for coal	4 00
	2d do	2 00

Sect.		$ c.
28. Best Parlor Stove for wood		4 00
2d	do	2 00
29. Best Parlor Stove for coal		4 00
2d	do	2 00
30. Best Parlor Grate		5 00
2d	do	3 00
31. Extra Entries.		

CLASS LI.—MISCELLANEOUS.

1. Best assortment of Brushes		5 00
2d	do	3 00
2. Best assortment of Combs		3 00
2d	do	2 00
3. Mest Model of a Steam Vessel		4 00
2d	do	3 00
4. Best Model of a Sailing Vessel		4 00
2d	do	3 00
5. Extra Entries.		

CLASS LII.—MUSICAL INSTRUMENTS.

1. Best Harmonium		7 00
2d	do	5 00
2. Best Melodeon		6 00
2d	do	4 00
3. Best Organ, Church		15 00
2d	do	8 00
4. Best Piano, Square		10 00
2d	do	6 00
5. Best Piano, Cottage		10 00
2d	do	6 00
6. Best Violin		3 00
2d	do	2 00
7. Extra entries.		

CLASS LIII.—NATURAL HISTORY.

1. Best collection of Stuffed Birds of Canada, classified, and common and technical names attached		7 00
2d	do	5 00
2. Best collection of Native Fishes, stuffed or preserved in spirits, and common and technical names attached		7 00
2d	do	5 00
3. Best collection of Native Insects, classified and common and technical namesa ttached		6 00
3d	do	4 00
4. Best collection of Stuffed Mammalia of Canada, classified, and common and technical names attached		7 00
2d	do	5 00
5. Best collection of Minerals of Canada, named and classified		7 00
2d	do	5 00
6. Best collection of Native Plants arranged in their natural families, and named		7 00
2d	do	5 00
7. Best collection of Reptiles of Canada, stuffed or preserved in spirits, classified, and common and technical names attached		7 00
2d	do	5 00
8. Best collection of Stuffed Birds and animals of any country		7 00
2d	do	5 00
9. Best collection of the Woods of Canada, in boards two feet long, one side polished; also, a portion of the tree cut in sections, showing the bark		7 00
2d	do	5 00

CLASS LIV.—PAPER, PRINTING, BOOKBINDING, AND THEIR MATERIALS AND TOOLS.

1 Best Bookbinding, (blank-book)		5 00
2d	do	3 00
2. Best Bookbinding, (letterpress)		5 00
2d	do	3 00
3. Best assortment Bookbinders' leather		5 00
2d	do	3 00
4. Cartridge Paper		2 00
2d	d	1 00
5. Best Letterpress Printing, plain		5 00
2d	do	3 00
6. Best Letterpress Printing, ornamental		5 00
2d	do	3 00
7. Best 1 dozen rolls Paper Hangings (Canadian paper,) grounded		5 00
2d	do	3 00
8. Best 1 dozen rolls Paper Hangings, (Canadian paper,) self-grounded		3 00
2d	do	2 00
9. Best assortment paper manufactured from straw		6 00
2d	do	4 00
10. Best Printing Paper, one ream		5 00
2d	do	3 00
11. Best Printing Ink		2 00
2d	do	1 00
12. Best assortment Printing Type		5 00
2d	do	3 00
14. Best ream of stout Wrapping Paper		3 00
2d	do	2 00
14. Best ream of fine Wrapping Paper		3 00
2d	do	2 00
15. Extra entries		

CLASS LV.—POTTERY, BUILDING AND PAVING MATERIALS.

1. Best 1 dozen hollow bricks for building purposes		5 00
2d	do	3 00
2. Best collection of Canadian Building and Flagging Stones		10 00
2d	do	6 00
3. Best Filterer for water		3 00
2d	do	2 00
4. Best assortment Pottery,		8 00
2d	do	4 00
5. Best Sewerage Pipes, stone ware, assortment of sizes		6 00
2d	do	4 00
6. Best assortment Stoneware,		6 00
2d	do	4 00
7. Best Slates for roofing		5 00
2nd	do	3 00
8. Extra Entries		

CLASS 56—SADDLE, ENGINE HOSE AND TRUNK MAKERS' WORK, LEATHER, &c.

Sect.		$ c.
1.	Best Engine Hose and Joints, 2¾ inch diameter, 50 feet of copper rivetted	5 00
2d	do	3 00
2.	Best set of double Carriage Harness	6 00
2d	do	4 00
3.	Best set of single carriage Harness	5 00
2d	do	3 00
4.	Best set of team Harness,	5 00
2d	do	3 00
5.	Best six assorted carriage and team Horse Collars	3 00
2d	do	2 00
6.	Best Ladies' quilted Saddle	6 00
2d	do	4 00
7.	Best Ladies' quilted safe Saddle	4 00
2d	do	3 00
8.	Best Gentlemen's full quilted Saddle	6 00
2d	do	4 00
9.	BestGentlemen's plain shaftoe Saddle	4 00
2d	do	3 00
10.	Best solid leather Trunk	5 00
2d		5 00
11.	Best Trunk, millboard, leather cov'rd	3 00
2d	do	3 00
12.	Best Trunk, wood, leather covered	3 00
2d	do	2 00
13.	Best assortment Valises	3 00
2d	do	2 00
14.	Best assortment of whips	5 00
2d	do	3 00
15.	Best assortment of Whip Thongs	3 00
2d	do	2 00
16.	Best Hames, four pairs of iron car-carriage or gig	3 00
2d	do	2 00
17.	Best Hames, three pairs of iron cased team or cart	3 00
2d	do	2 00
18.	Best Hames, six pairs of wooden team	3 00
2d	do	2 00
19.	Best Ladies' Saddle Tree	3 00
2d	do	2 00
20.	Best Gentlemen's Saddle Tree	3 00
2d	do	2 00

Leather.

21.	Best Belt Leather 30lbs	3 00
2d	do	2 00
22.	Best Brown Strap, and Bridle, one side of each	3 00
2d	do	2 00
23.	Best Carriage Covers, two skins	3 00
2d	do	2 00
24.	Best Deer Skin, dressed	2 00
2d	do	1 00
25.	Best Harness Leather, two sides	3 00
2d	do	2 00
26.	Best three Hog Skins for saddles	3 00
2d	do	2 00
27.	Best Lacing Leather, one hide	2 00
2d	do	1 00
28.	Best Patent Leather, for carriage or harness work, 20 feet	5 00
2d	do	3 00
29.	Best Skirting for saddles, two sides	3 00
2d	do	2 00
30.	Extra entries.	

CLASS LVII.—SHOE AND BOOT MAKER'S WORK, LEATHER, &c.

1.	Best Balmoral Boots, one pair of Ladies'	3 00
2d	do	2 00
2.	Best assortment Shoemaker's work	6 00
2d	do	4 00
3.	Best Kid Slippers, one pair of Ladies'	2 00
2d	do	1 00
4.	Best Lace Boots, one pair of gentlemen's sewed	3 00
2d	do	2 00
5.	Best Lace Boots, one pair of gentlemen's, pegged	3 00
2d	do	2 00
6.	Best Wellington Boots, one pair of gentlemen's, sewed	4 00
2d	do	3 00
7.	Best assortment of Boot and Shoemaker's Tools	6 00
2d	do	4 00
8.	Best assortment of Boot and Shoemaker's lasts and trees	6 00
2d	do	4 00
9.	Best assortment of Shoe Pegs	3 00
2d	do	2 00

Leather.

10.	Best two Calf Skins	3 00
2d	do	2 00
11.	Best 2 Morroco Calf Skins	3 00
2d	do	2 00
12.	Best two skins Cordovan	3 00
2d	do	2 00
13.	Best 2 dressed Dog Skins	3 00
2d	do	2 00
14.	Best 2 sides Kip Skins	3 00
2d	do	2 00
15.	Best six skins Linings	3 00
2d	do	2 00
16.	Best 20 feet Patent Leather for boots	5 00
2d	do	3 00
17.	Best six colored Sheep Skins	3 00
2d	do	2 00
18.	Best two sides Sole Leather	3 00
2d	do	2 00
19.	Best two sides Upper Leather	3 00
2d	do	2 00
20.	Extras	—

CLASS LVIII.—WOOLLEN, FLAX, AND COTTON GOODS.

1.	Best 12 Bags from Canadian Flax	4 00
2d	do	3 00

Sect.	$ c.
2. Best 12 Bags, cotton	3 00
2d do	2 00
3. Best pair woollen Blankets	6 00
2d do	4 00
4. Best 12 yards woollen Carpet	6 00
2d do	4 00
5. Best 12 yards woollen stair Carpet	4 00
2d do	3 00
6. Best 12 yards Cloth, fulled	6 00
2d do	4 00
7. Best 12 yards broad Cloth,	6 00
2d do	4 00
8. Best two Counterpanes	5 00
2d do	3 00
9. Best 28 lbs Flax or Hemp Cordage	5 0
2d do	3 00
10. Best assortment ofCordage and twines from Canadian Flax or Hemp	6 00
2d do	4 00
11. Best Check for Horse Collars, 12 yards	4 00
2d do	2 00
12. Best pair woollen Drawers, factory made	4 00
2d do	2 00
13. Best 12 yards Flannel, factory made	5 00
2d do	3 00
14. Best 12 yds Flannel, not factory made	5 00
2d do	3 00
15. Best 2 pairs Horse Blankets	5 00
2d do	3 00
16. Best 12 yds. Kersey, for horse clothing	5 00
2d do.	3 00
17. Best 12 yards Linen Goods	5 00
2d do	3 00
18. Best 12 yards checked Minsey	5 00
2d do	3 00
19 Best 12 yards Black Satinet	6 00
2d do	4 00
20. Best 12 yards mixed Satinet,	5 00
2d do	3 00
21. Best 3 woolen Shawls	5 00
2d do	3 00
22. Best 3 woollen Shirts, factory made.	5 00
2d do	3 00
23. Best 3 pairs wollen Stockings, factory made	4 00
2d	2 00
24. Best 3 pairs woollen Socks, factory made	2 00
2d do	1 00
25. Best 3 pairs, mixed woollen and cotton Stockings, factory made	4 00
2d do	2 00
26. Best 3 pairs mixed woollen and cotton, Socks, factory made	2 00
2d do	1 00
27. Best 12 yards Winter Tweed	6 00
2d do	4 00
28. Best 12 yards Summer Tweed	6 00
2d do	4 00
29. Best assortment Linen and Cotton Twines	3 00
2d do	2000
30. Best assortment Woollen Cloths, Tweeds, &c.,	7 00
2d do	4 00
31. Best assortment Woollen Shawls, Stockings, Drawers, Shirts, and Mits	7 00
2d do	4 00
32. Best 1 lb Woollen Yarn, white	2 00
2d do	1 00
33. Best 1 lb Woollen yarn, dyed	2 00
2d do	1 00
34. Extra entries	

MUSIC.

The following Prizes are offered for Bands:—

For the Best Canadian Amateur Band consisting of not less than eight performers, of whom there shall not be more than two professional artists	100 00
2d do	75 00
3d do	50 00

Each Band will be required to execute the following pieces of Music, viz:—The National Anthem; Rule Britannia; a Quick Step; Waltz; Song; Polka; Set of Quadrilles, and a Medley or Operatic Piece; and to be on the grounds under the direction of the Committee during the continuance of the Exhibition. Bands intending to compete will communicate their intention to the Secretary of the Association at Toronto, or to the Secretary of the Local Committee, at London, at least a week before the Exhibition commences.

CLASS LIX.—FOREIGN MANUFACTURES.

Foreign Articles will be admitted for exhibition only; but Certificates will be awarded to any article of worth or peculiar merit.

Miscellaneous.

A Farmer's Sunday.—We take the following from a long and interesting paper in the *Mark Lane Express*, written by a Practical (English) Farmer. The scenes and duties described we are happy to say are by no means uncommon among the same class in Canada. There is, however, much room for improvement in this important matter; for the Sabbath is too frequently spent in a manner that is conducive neither to the health of the body, the improvement of the mind, nor the welfare of the soul]

If I might venture to point out my idea of what a farmer's Sunday should be, it would be something like the following. It should begin

on the Saturday by making every provision for it. The straw and provender for the cattle and horses in the fold-yards should be all got in, and be deposited conveniently for serving out in the morning. The turnips and chaff all cut and ready. The meal for the pigs all mixed, and their styes made all clean and comfortable. The sheep in the field should have a double fold, and their turnips should be all cut and placed beside the troughs in readiness for filling. The household work should all be finished up for the week, and everything be made tidy and clean. The shoe-boy's knives and forks, his boots and shoes, to be all shining and in their places; his yards swept and in order. The other servants should contrive their work in their departments to make all look clean and nice, so that all and everything may contribute to make a quiet and peaceful Sabbath. This is a day of rest; therefore the servants should have the indulgence of an extra hour's repose, which is generally much needed after the toils of the busy week; and when they rise, it is to see a smiling morn free from care and labour. The necessary business of attending to the stock, &c, should be done as quickly and noiselessly as possible; thus making a marked difference in this respect, so that all shall know it as a day set apart for better purposes. The family assemble for breakfast; the master reverently asking the Divine blessing upon the ample provision, let this meal be partaken with cheerfulness, and sober serious conversation. Immediately afterwards all the available servants ought to be summoned to hear a portion of scripture read, and to engage in family prayer. Then comes the preparation for attendance upon Divine service, to which all that can possibly be spared should have the privilege and be induced to go—the farmer's own family along with him: the servants to those places of worship to which they belong or shall prefer; for no farmer ought to influence or coerce in this respect; his duty is to ascertain that they do attend at some place where divine service is properly conducted, but no further. * * * * * *

I have oft pictured to myself the manner in which most plain practical farmers might spend their Sundays. I once visited one of this class, and stayed over the Sunday. We were all up betime in the morning, having some miles to travel to church. After an excellent and substantial breakfast, the servants were summoned into the breakfast-room, and, with Testaments in hand, each readily took his accustomed place. The Scriptures were read as in class, and the master concluded with reading an appropriate prayer. This was an excellent preparation for the religious observances of the day. We attended both the morning and afternoon services, which were conducted by the same clergyman, but in different churches. In the evening all the household were again summoned, and a continuous reading of the Scriptures again took place, extending over several chapters, followed by family prayer, in which we took the responses. This I have never forgotten, and though it occurred more than thirty years ago, I always recur to the scene with lively interest. Here was occupation in which all took part, and that with pleasure. One portion of the evening's engagement I had almost forgotten. The two intelligent servant-lads gave us a very good digest of the sermons of the day, which they had written out, upon which we also made our own remarks. I don't name this as a pattern family, but as one specimen to show how the farmer's family may be profitably and agreeably occupied during the whole of the Sunday.

An American Weed in England.—It appears that an aquatic weed of most singular qualities, said to have been imported from America within the last ten years, is producing much trouble and annoyance in England by impeding the current of water, and the progress of boats in many of the larger as well as smaller streams in different parts of the country. The plant is supposed to have been introduced attached to imported timbers. Whether the plant is indigeneous to the more northern parts of the American Continent is doubtful; but botanists will probably be able to settle the question.

Mrs. S. C. Hall, writing from Ensham, on the upper Thames, says: —"It is in this neighborhood we begin to perceive the dangerous results of the recent and rapid growth of the weed, *Anacharis alsinastrum*, commonly called "the American weed." It has not been known in England more than ten years; but during that brief period it has spread so extensively—almost universally—through every district of our island, as very frequently to affect the traffic of rivers and canals, to impede the currents of minor streams, and even to fill up isolated ponds. It has already rendered the Thames, in some parts, almost impassable without difficulty.

A small pamphlet, written by William Marshall, Esq., of Ely, gives its history as far as it can be given. The intruder is so unlike any other water-plant, that it may be at once recognized by its leaves growing *in threes*, round a slender or stringy stem. The color of the plant is a deep green; the leaves are about half an inch long, by an eighth wide, egg-shaped at the point, and *beset with minute teeth, which cause them to cling*. The stems are *very brittle*, so that whenever the plant is disturbed, fragments are broken off. Although, at present, it cannot propagate itself by seed, (all the flowers being male,) its powers of increase are prodigious, as every fragment is capable of becoming an independent plant, producing roots and stems, and extending itself indefinitely in every direction. Most of our water-plants require, in order to their increase, to be rooted in

the bottom or the sides of the river or drain in which they are found; but *this* is independent altogether of that condition, and *actually grows as it travels* slowly down the stream *after being cut*" That this weed is "a foreigner" there can be no doubt. Weeds very closely resembling, if not identical with it, are found in American rivers. Mr. Marshall is of opinion that it is an importation from North America; and that, probably, its first visit was paid to us in a load of American timber. He considers that all attempts to "get rid of it" must be futile; *That it never can be eradicated;* and that all we shall be able to do is to "keep it down." Its rapid spread is one of the marvels of nature. It is becoming a serious evil; the Commissioners of the Thames should lose no time in grappling with the common enemy."

SERVANTS IN AUSTRALIA.—Mrs. Merdith in her new publication "Over the Straits; a visit to Victoria" asserts that Australia beats all the rest of the world in the freedom of servantgalism. Here is a scene which she states actually occured at Melbourne:—

A lady is in want of a servant, and a damsel appears as an applicant for the situation, dressing in everything that can be put on at once; in the lady's drawing-room, she selects the most tempting 'causeus-,' and seats herself. The lady looks with astonishment.

'What are you staring at? Because I'm sitting down? Why you don't suppose I'm going to stand all the while I'm talking to you? Could'nt think of such a thing! Oh! I tell you, you don't need to be surprised,—it's quite colonial.'

The question of wages is brought forward.

'Wages? Oh! I suppose you mean my salary. Well, I'll take £150 a year, if the work's light.'

The lady walks slowly up and down.

'I do wish you'd sit down. I hate talking to folks when they're walking about. And now I've took the trouble of coming to speak about business, I must beg you'll sit still.'

'Very well—perhaps I mayn't object to the situation. And you'll understand I like to have my friends to tea and supper, and sometimes to dinner, and when I've company I can't be running after you. And then I always have two days to myself every week! 'sides Sundays.'

'Two entire days! exclaimed the amazed mistress; 'and who's to do to do the work?'

'*Who's to do the work?* Why you, to be sure! who else is likely to do it? Oh, you needn't look that way—I assure you it's quite colonial. Then, I suppose, you're clever with your needle? Most folks is from the old country.'

'Me!' replies the lady. 'Me clever with my needle! Why, what can that possibly signify to you?'

'Signify? Oh, all in the world; because you'll have to help me to make my dresses.—Couldn't think of engaging with anybody as isn't able to do that. It's quite colonial.

Editorial Notices &c.

THE LEGISLATIVE GRANT.—The Treasurers of County Agricultural Societies, who have not already done so, are requested to send forward their affidavits of the amount of subscriptions in their hands of their respective county and township societies for the current year, immediately, so that they may be made available for the procuring of the Government grant at as early a date as possible.

CORRECTION.—In the *Agriculturist* of May 1st, page 284, the number of members of West Northumberland Agricultural Society is stated as 180. The actual number of members at that time was 105.

FRESH GARDEN, FIELD and FLOWER Seeds for Spring Sowing.

The Subscriber begs to inform his friends and the public that his stock of Fresh Seeds is now complete, and very extensive, embracing almost

EVERY VARIETY OF SEED

that is adapted to the country. The stock of Agricultural Seeds is large and well selected, and the vitality of each sort being fully tested, the genuineness of the seeds may be fully relied upon.

Merchants and Agriculturial Societies ordering Seeds in bulk will be supplied at wholesale prices. Complete assortments of garden seeds neatly put up in small papers, with directions for sowing, and sold by the box containing 150 papers for $5. Twenty packages of Flower Seeds, choice sorts, will be sent free by post to any part of the Province, to the address of any party remitting $1, free of postage, or 25 packages, postage unpaid.

The Subscriber wishing to give parties who reside at a distance an opportunity to test the qualities of his seeds, will on the receipt of $2, free of postage, send free to any Post Office in Canada, 25 full sized packages of VEGETABLE SEEDS, many of them containing an ounce of seed, and 12 papers of choice FLOWER SEEDS with descriptive catalogue and box included—the seeds to be of my own selection. None but the most useful and desirable varieties will be sent.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.

Toronto, April 22, 1861. 9—3t.

SEEDS! SEEDS! SEEDS!

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CORNER OF FRONT STREET AND WEST MARKET SQUARE.

THE Subscriber would beg to direct the attention of his friends, and the Public to his assortment of

FIELD, GARDEN, AND FLOWER SEEDS,

Comprising large quantities of *Turnips*, *Carrots*, *Mangel-wurzel*, *Cabbage*, *Onion*, *Parsnip*, and everything worthy of cultivation in this latitude. They are all of the best quality and procured from such sources as to warrant their genuineness.

THE SIXTH ANNUAL EDITION OF HIS PRICED CATALOGUE

Of seeds, contains full directions for the treatment of various Seeds and Crops, together with much valuable information regarding this subject, and *may be had gratis on application.*

It forms a neat little pamphlet of 45 pages, and a perusal of it will show purchasers the advantage of procuring their supply of Seeds from responsible Seedsmen, instead of from parties having no knowledge whatever of the business.

The satisfaction so generally expressed by those with whom he has had the pleasure of dealing heretofore leads him to hope that he will continue to receive a large share of the Public patronage.

Orders per post or otherwise will receive prompt attention, and are are requested to be addressed to

J. A. SIMMERS
Seedsman.

Toronto, April, 1861. 4-t.

FOR SALE.

A PURE bred young short horn Bull ; Sire an Dam imported in 1857, and *both* took First Prizes at the Provincial Show in Brantford the same year.

Address, R. R. Bown, Brantford.

N. B. Full blooded cow stock taken in exchange, if desired.

Brantford, April 8th, 1861. 4-t

SHORT HORNS.

FOR SALE—FIVE BULLS, all entered in American Herd Book. Prices, from 100 to 400 dollars. Also, a few HEIFERS, at low prices. Apply to

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St. Lawrence County, New-York,
or at the *Agriculturist* office, Toronto.

March 9, 1861. 6 t

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TO LANDED PROPRIETORS.

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Satisfactory references and testimonials given by addressing AGRICULTURIST, *Post Office Paris, C. W.*

Paris, C. W. June, 1861 3t.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the GovernmentHouse. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Toronto, 1861. *Secretary.*

The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE [illegible], OF AGRICULTURE OF UPPER CANADA

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, JULY 1, 1861. No. 13.

The Water Drill.

It will be seen by the Prize List of the Provincial Associatian for the present year, that the Board of Agriculture, (at the suggestion of J. B. Marks, Esq., an old, tried friend of Canadian agriculture, whom we most cordially welcome back again among us,) have offered a liberal premium for a water or liquid manure drill; an article as yet, we believe, unknown in Canada, and probably also in the United States. A few words, therefore, in reference to this novel machine, which has been in use in the old country only some half-dozen years, will not be unacceptable to our readers.

The advantages of the Drill in cultivating both grain and roots, are generally known and acknowledged; and the practice has been surely, if not rapidly, extending in this Province for several years. Mechanical art most opportunely came to the help of British farmers when artificial manures, such as guano, super-phosphate of lime, bone dust, &c., were introduced as fertilizers, by so constructing the drill as to enable the machine to deposit the seed and these comminuted manures by one process, thereby effecting both economy and efficiency. The liquid manure cart, for distributing over grass or other crops during their incipient stages of growth, the drainage of the farm-yard, mixens &c., properly diluted with water, has now been a considerable time in use where agriculture has attained to an advanced condition, and the introduction of the water or liquid manure drill may justly be regarded as among the most recent refinements of this indispensable and ever progressing art. Solid manuring substances, which can be dissolved in water, are by this novel process deposited below the seed in the most favorable condition for promoting germination, and accellerating the early growth of the plant; an object of great and general importance, and in the case of some species,—the turnip, for example,—altogether essential to the realization of a large crop. The advantages produced by the water drill, like most other agricultural operasions, are modified by soil, climate, &c., and, therefore, it is unreasonable to expect the same results, in extent, at least, in all seasons and in all places. In many parts of England this machine has been employed, almost invariably with a satisfactory amount of success; and on dry, gravelly soils, the results have been often quite astonishing.

In a recent number of the *Journal of the Royal Agricultural Society of England*, Mr. Ruston has a very interesting paper on the Water Drill, in the use of which he appears to have had extensive experience. He uses Chandler's Water Drill; and when speaking of his mode of drilling tells us that when sowing mangel, cole-seed, or turnips, he invariably uses only two coulters, which, with a four feet six inches drill, makes the rows just twenty-seven inches apart. Mr. Ruston dissolves guano, superphosphate of lime,

&c., in water, about one ton to the acre, and finds it exceedingly beneficial, especially on dry gravelly soils, such as are thin and poor, and under the usual mode of preparation, yield but very indifferent crops of any description. And if in the moister and cooler climate of England the water drill is found, after extensive trials, to be so advantageous, it is surely not likely to be less, but rather more beneficial in Canada, where the summers are much warmer and the climate far drier and hotter during the season of vegetable growth.

But the value of the mere ton of water per acre added to the soil is far more considerable than at the first sight appears; for if we suppose that the liquid is drilled at a distance of twenty-seven inches, and that there are ninety-two rows of seventy yards in length per acre; and if we calculate that the water delivered from each coulter moistens an extent of the soil equal in breadth to three inches, then this moistening of the soil extends to only 536 square yards of soil, or at the rate of between nine and ten tons per acre, which, if it fell in rain, would be a good soaking shower, equal to about one-tenth of an inch; but which, from falling on the surface of the field, would assuredly be far less advantageous to the young plant than the same amount deposited under the surface immediately in contact with the germinating seeds. Or, to put the same thing in another way, as the water drill moistens *in breadth*, (if we calculate the diffusion of water at three inches, and the drills at twenty-seven inches apart,) one-ninth of the land then drilling in one ton of water, is equal to nine tons moistening the whole acre.

Mr. Ruston commenced his experiments with the manure drill in 1854, and found by repeated trials in subsequent years, that this mode of applying liquid manure was alike beneficial to grain, particularly oats, as to mangels, turnips, colewort, &c. We subjoin, in a condensed tabulated form, the results of his experiments with mangel wurzel, the seed being drilled, and the land dunged, and super-phosphate of lime mixed with the water:

Drills.	Cwt. per acre.		Produce per acre Loads.	Tons.cwt
Water—1½ Super-phosphate of lime.		dung	16.....	20 16
Dry— do	do	do	16.....	15 9
Dry—None		do	16.....	13 12
Water—1½ Superphosphate		do	16.....	21 00
Dry— do	do	do	16.....	15 16
Dry—None		do	16.....	15 00
Water—1 Super-phosphate		do	11.....	17 7
Dry— do	do	do	11.....	13 15
Dry—None		do	11.....	8 15
Water—1¾ Super-phosphate		do	11.....	15 14
Dry— do	do	do	11.....	14 14
Dry—None		do	11.....	11 17
Water—1 Super-phosphate		do	13.....	13 12
Dry— do	do	do	13.....	10 8
Dry—None		do	13.....	6 18
Water—1½ Super-phosphate		do	15.....	9 18
Dry— do	do	do	15.....	8 12
Dry—None		do	15.....	6 10
Water—1 Super-phosphate		do	13.....	27 14

Mr. Ruston remarks that the season when those experiments were made was exceedingly unfavorable; that during August and September, just when the bulbs should have been daily gaining considerable weight, the drought was intense, and in one or two instances imperilled their existence. Those sown with the dry drill were in some instances a total failure; the land being too light and poor for crops of this kind, except in showery summers and with dressings of barn-yard manure.

"Why is it," remarks Mr. Ruston, "that such marvellous results, on some soils especiallly, should accompany the use of the water drill, and super-phosphate of lime, belongs rather to the chemist than the practical farmer to explain. It appears pretty certain, that the action of the water upon the soluble portions of the manure is such that healthy food is made immediately available to the plant, whilst the less easily soluble portions are slowly and gradually decomposing in the soil, yielding the support required by the plant, as it continues to progress, and, as the experiments show, not failing it until its full growth has been attained. I have also furthur learned from experience, that the manure sown in this liquid form is not only beneficial and influential upon the early growth of plants when applied to lands where drought or a deficiency prevails, but also upon lands which are in a satisfactory state, as regards moisture. On one or two occasions I sowed lands with coleseed which were too wet to roll, and when the horses had to be taken out in consequence; *and yet the difference between the crops where the manure was sown with the water drill and where applied with the dry drill was as oppa-*

rent and as marked as in any other cases where the lands were in a totally opposite condition. One would scarcely have expected this. The general supposition would have been that the moisture contained in the soil would have exerted the same influence upon the more easily soluble portions of the manure, as did the water applied to it in the cistern of the drill, and that therefore the crop would have been equally vigorous and healthy where the manure was sown dry as where sown in a liquid form. But the result proved otherwise."

Precautions to be taken in the Cultivation of Potatoes.

This indispensable esculent continues more or less affected by the mysterious disease, which commenced such destructive ravages some seventeen years ago, and from which it has never yet, for a single year, been entirely free. In Canada the disease has sometimes been exceedingly virulent, and we observed it last season in some parts of England, Ireland, and France in a very aggravated form. A writer in the *Journal de la Societe Centrale d' Agriculture Belgique*, for September last, estimates the yield of this root, at least, a third less than it was twenty-five years ago, without including the tubers thoroughly diseased. The causes of the diminution, according to his view, may be summed up as follows:

1st. The late planting, which prevents the plant undergoing at the proper period the different phases of vegetation, and weakens the vital principle of the potatoes, which an earlier planting would have strengthened.

2nd. The division of the tubercle into quarters, which deprives the plant of the nourishment nature has placed at its disposal.

3rd. The principal cause of the diminution of the potato crop, is in the use of the lower part of the tubercle, instead of the upper part or crown. The author had proved that the latter produced sprouts, not only stronger, but quicker and more productive; whilst the lower part of the tubercle produced sprouts later and less vigorous. The sprouts are often very slender, and produce weak stalks without any strength, and which fall to the ground; and often at the raising of the potato an abundant quantity of hair-like roots is found instead of potatoes; or, if they are found, it is in small numbers and of very small size. These facts are said to be but little known among agriculturists, who should choose for planting tubers with large germs; and if they do not wish to plant them whole, cut them in twos and across; plant only the upper half or crown, and keep the lower part for consuming.

4th. It is advisable after raising the crop, to wash the *seed* potatoes in *fiorin* or *urine* with lime and salt; and those intended for domestic consumption in water with lime and salt, and let them be well dried before pitting. The seed potatoes should not be taken out till the time for planting, in order that the germs and little roots may not be destroyed, as that would weaken and retard the growth of the plant. When potatos are kept in out-houses, it is best to pick them long before planting, in order to dry the wound. A hard crust is formed on the surface, which preserves the pulp from decaying and from insects. It is also advisable, after having cut the tubers, to expose them to the sun, to make them green before planting. Seed potatos should be chosen from the most productive parts, and free from disease.

From an elaborate article in a recent number of the *Journal of the West of England Society*, on potato culture, from the pen of Dr. Lang, in which many curious and important truths are discussed, the following may be regarded as conclusions deduced from his treatment of the whole subject.

1st. The desirability of *early planting* in dry, clean, and well prepared ground.

2. That white potatos are less liable to the disease, and therefore to be preferred to the colored sorts.

3. That the soil in no case *produces* or *influences* the disease.

4. That the disease is of a fungoid character, infesting many varieties of plants, and increased in activity by atmospheric causes.

5. That all heterogeneous manures are injurious.

6. That lime and salt, mixed in the proportion of 8 tons of lime with 3 cwt. of common salt, is the best manure; and this is the proportion used to the acre.

7. That potatoes that ripen earliest should be exclusively grown.

8. That, as soon as the disease appears, earthing up the stalks repeatedly with fine earth from the centre of the trench is the only effectual preventive to its ravages. To this operation the author consequently attaches the greatest importance.

9. That when exhumed, *sunlight* appears to arrest the progress of the murrain, and prevents the further decomposition of the tuber.

Without committing ourselves to all the above statements and suggestions, some of which are, we think, doubtful or open to well founded objections, the attentive reader will find much useful material for thought, which if carefully considered cannot fail to impart valuable aid in coming to sound conclusions, as far as our confessedly limited and imperfect knowledge will as yet permit, on this very important and equally difficult subject.

Judges and Unsuccessful Competitors.

FOR THE AGRICULTURIST.

Amidst the general harmony and joyousness which prevail at our Provincial Exhibitions, there arises annually, more or less, a murmur of disappointment, anger, and from some, even of execration. The cause of this is the real or imagined erroneous decisions of the judges. Incorrect judgments, inasmuch as they fail to accomplish one principal design of the exhibition, and shake the confidence of exhibitors, cannot be too carefully guarded against. But how effectually to do so is a difficult question. I have read more than one communication in the Agriculturist since last autumn, asserting and denouncing the mischief; but going no further in the way of proposing a remedy than the statement, "competent judges should be appointed."

I have one suggestion to offer, which, if adopted, would at least do a little in the right direction. When any parties are called on to name persons in their locality suitable for judges, let them be requested to give not only name and address, but the occupation of the individual, and their reasons for considering him competent in the particular class for which he is recommended. Let the appointments be made as early as possible, with one or two extra names for each class, and let each of the appointing committee keep a list of the names, and use every available means of further information in the case of parties who are unknown. When it is time to notify those selected, let the appointments be reviewed and finally decided on. Something of this kind would at least have prevented one or two instances I remember of men being put in the wrong place.

But my present object was chiefly to bring forward some considerations tending to show the folly and injustice, in most cases, of the sweeping condemnation poured on managers and judges by parties who are dissatisfied with the awards.

It is no libel on humanity to say that there is in the character of most men enough of selfishness to materially dim their perception of defects, both in themselves and their productions. Although there are those possessed of integrity, discernment, and candour sufficient to overcome this weakness, yet they are the exception; and where its influence prevails, it is a fertile source of dissatisfaction whenever an adverse judgment is pronounced upon their works.

With nearly every article exhibited, there is some expectation of a prize—in some cases, a persuasion that it "cannot be beat;" consequently, when these hopes are not realized, there is more or less of vexation, which, combined with before-named tendencies, is sufficient, without any error on the part of judges to beget dissatisfaction.

With every means used to procure judges in all respect suitable, there must, in an exhibition where a great variety of productions are collected, be at times, some failures. It is common to insist that judges should not only be competent, but unacquainted with the ownership of what they are judging. This, while very desirable, it is impossible always to secure.

There is frequently some diversity in the views of those who may be regarded as competent men. One, for example, attaches more importance than another to some prominent excellence in an animal or article of manufacture. Another, with a keen eye for symmetry, cannot lose sight of what his friend regards as only a slight defect. In these and other ways, those who may be regarded as competent, will at times differ.

An ordinary observer accustomed to attend exhibitions where prizes are competed for, will meet with incidents, some of them very annoying, illustrating what I have advanced.

I infer from all this: 1. That there is cause for wonder that complaints are not more numerous. 2. That few competitors are competent judges of their own case. 3. That it is vain to expect even an approach to universal satisfaction.

Guelph, June, 1861. S.

Wool.

Subjoined will be found the copy of a letter from the Governor General's Secretary to the President of the Board of Agriculture of Upper Canada, of a letter from the Duke of Newcastle

to Sir Edmund Head, and of an address of the Wool Supply Association of the Bradford and Halifax Chamber of Commerce to all parties interested in the growth of Colonial and Foreign wools. The correspondence referred to between the Bradford Chamber of Commerce, the Board of Trade, and the Colonial Office, merely relates to the dissemination of the information and of the specimens of wool referred to, to the desired quarters. These communications are accompanied by three different samples of wool, each sample consisting of two lots, showing the wool of the ewe and the wether, and which represent, we suppose, the grades of wool the trade wish to obtain an increased supply of. The samples are as follows,—1st: Hog Lustre Wool, Wether Lustre Wool. This is about eight inches in length, of a bright lustrous appearance, not very fine in the fibre, but of a somewhat silky, flossy texture; just such wool as we find upon our best Leicester sheep at their first shearing. 2nd: Half-bred Hog, Half-bred Wether. This is about five to six inches in length, finer and more wavy in the pile than the first, and not so lustrous in appearance; a good specimen of the fleece of a cross between the Southdown and Leicester or Coltswold. 3rd: Down Teg, Down Wether. This has a staple of four to five inches long, very fine in the fibre, soft and elastic to the feel; good specimen of fine Southdown fleece.

The Address of the Wool Supply Association, and the remarks appended, will be found interesting and important to all breeders of sheep, especially to those who reckon upon the wool as a considerable item in their returns from their flocks. The price to be got for wool depends upon its quality, and the most desirable quality and condition can only be produced by paying attention to the requirements of the market. The communications referred to are as follow: —

Governor's Secretary's Office,
Quebec, June 14, 1861.

Sir,—I have the honor, by command of His Excellency the Governor General, to enclose a copy of Despatch from the Secretary of State, and enclosures (printed) with two samples of Wool to which it refers, and to request that such steps may be taken as may appear to you to be best calculated to meet the wishes of the Board of Trade for disseminating the information contained in these documents.

I have the honor to be, Sir,
Your obedient servant,

Francis Retallack,
Acting Governor's Sect'y.

Col. Thomson,
President
Agricultural Association, U. C.,
Toronto.

(copy.)

Circular.

Downing Street,
23rd May, 1861.

Sir,—I transmit to you herewith copies of correspondence between the Board of Trade and this Department, on the subject of a communication from Mr. Ripley, the President of the Chamber of Commerce at Bradford, and of an address from the Wool Supply Association of the Bradford and Halifax Chamber of Commerce, to all parties interested in the growth of Colonial and Foreign Wools. Mr. Ripley is desirous that the address, together with prepared samples of wool, should be disseminated through her Majesty's Consuls and Governors to all places from which wool is exported to this country. I enclose, therefore, with this correspondence, the packets intended for the Colony under your Government, and I have to request that you will give publicity to the facts contained in the address, as suggested by the Board of Trade.

I have, &c.,
(Signed.) Newcastle.

The Right Honourable
Sir E. Head, Bart.

THE CHAMBER OF COMMERCE FOR THE WORSTED DISTRICT.

Bradford, Yorkshire, Feb. 21, 1861.

Address of the Wool Supply Association of the Bradford and Halifax Chamber of Commerce to all parties interested in the growth of Colonial and Foreign Wools.

The increase of the Worsted Trade of Great Britain has been very considerable during the last few years; and its further development has been checked only by the difficulty of meeting with an adequate supply of Long Wool.

To meet this condition of things, and in order if possible to increase the supply, the Wool Association is desirous of disseminating information in the wool-growing districts.

The increase in the imports of Foreign Wool during the same period has been very large; but these supplies were almost exclusively of a nature to adapt them to the Woollen rather than

to the Worsted manufacture. Those interested in the latter branch of industry are anxious to stimulate the growth of wools suitable to their wants. The qualities they require give to the wool a higher marketable value for all purposes of manufacture, and are, therefore, well deserving the attention of growers, collectors, and shippers of wool.

The wool (the increase of which they desire to promote) should have a staple from four to seven inches long, according to its fineness, and should, as far as possible, be uniform in quality throughout its whole length, bright and lustrous in apperance, *or* soft and kind to the touch, of good spinning properties, free from burrs or other vegetable fibre. It should also be well washed before it is clipped, or where this is not practicable, care should be taken that it is not cotted or felted in drying. It is most desirable to retain the whole natural length of the staple by only clipping the lambs or sheep once during the season's growth, unless local causes render it absolutely necessary to do so oftener.

It is also very desirable that a proper classification of wool should be made in packing, and that the packing should be thoroughly trustworthy and fair.

An improvement is already manifested in the wool of some countries, and the Association believe that it might be made general if proper care were taken in the selection of breeding sheep, particularly of the Rams, and, where necessary, by the introduction of new blood.

The flocks should, as much as possible, be pastured upon succulent grasses, similar to those grown in Great Britain.

The destructive effects of drought, or cold, or other climatic causes, which check the growth of the grasses, by depriving the sheep of their necessary supply of food, and render the staple tender, ought to be prevented by a constant supply of food throughout the whole year.

The Wool Supply Association will be happy to answer any inquiries, and give any information that foreign correspondents may require in their efforts to increase the supply and improve the quality of their wools, and to render any assistance in their power to facilitate the export of breeding sheep suitable for crossing and improving the inferior foreign breeds. Already ten Rams have been sent to India by this Association, from which the best results are expected.

The Wool Association offer their gratuitous services to parties abroad desirous of purchasing Rams for exportation, or in any other manner to promote the views expressed in their observations.

A few samples of different varieties of the Combing Wools required will be transmitted to the Consuls in foreign parts, and to the Governors of Her Britannic Majesty' Colonies, and wherever Wools suitable for the Worsted Trade are cultivated.

Address the Bradford Chamber of Commerce, as above.

Remarks concerning Wool,—chiefly pointing out the faults attached to each description named.

Oporto.—The wool usually imported from thence is long stapled and bright, but troubled with a sprinkling of grey and reddish hairs, which depreciate the value and limit the competition. The sheep, also, for want of attention, are apt to produce cotted and yellow tinged fleeces, which only realize in the English market about two-thirds the value of free open stapled white wools. The receipts from Oporto have increased considerably, but a good portion of the increase consists of wool from a lower breed, and is called here "Mountain Oporto." This description is part long, very coarse stapled, and the other part of the fleece is short and dull looking wool, unsuitable for same purposes as real Oporto, and realizing twenty-five per cent. less price. By attention this mountain wool might be raised to same character as the usually good description received from Oporto.

Iceland.—We don't know the exact quantity produced annually, but think it is 8,000 to 10,000 packs. The effect of a cold climate acting upon sheep left to nature has been to produce a wool consisting of a long spiry coarse top, with a fine downy bottom, which for English consumers is very objectionable, and reduces the value.

Russian.—The Donskoi Wool does not seem to meet with the same care as the flocks of merino that have attained such perfection in Southern Russia. The Donskoi sheep is probably in a state of nature, or at least partially so, and the Crimean entirely so. Both these admit of great improvement, and by care for a few years a long stapled good combing wool of finer quality might be produced, upwards of 30 per cent. more valuable. The Russian Government has the power, and probably the inclination, to initiate improvement, and will probably do so at its own expense, if the future advantage be made manifest. We see splendid flocks of merino have been created in Southern Russia during the last thirty years; we don't know whether this was done by the rich noblemen or the government, but it proves what improvement may be effected on a large scale.

Turkish.—Asiatic and European, including Servia, Bosnia, Nissa, Scutari, Scopia, Salonica, Angora, Smyrna, Syria, Persia.—These wools are usually very scurfy and kempy,* both of which are serious faults, but may be eradicated by attention. It seems as if most of these wools got no care at all, and in evidence of this we point to the large proportion of scurfy and mangy fleeces. There is the basis for capital combing wool, even if the growers cross with their own selected rams, without the introduction of English sheep.

*By Kempy Wool is meant the presence of short white hairs at the roots of the staple, which never take the dye, and disfigure all goods into which they are introduced.

East India and Persian Wool imported from Bombay.—Improvement has already commenced here, and a large field awaits full development. Each year our imports are collected from a wider range, and as we penetrate into a more temperate region, we find wool of a longer and sounder staple, assimilating more closely to our English descriptions than the short hairy wool that is usually grown nearer the Tropics. East India wool has a tendency to be burry and scurfy, with a slight mixture of grey hairs. The staple is generally too short.

China.—This wool is usually soft short stapled wool; looks like neither fleece nor lamb; it is usually very cotted, kempy,* and yellow. No attention seems to be bestowed upon it by the growers, but when a regular demand arises, the Chinese will, no doubt, turn their attention to the article, and effect desirable changes; and from the extraordinary fecundity of the sheep, large quantities might be produced.

Egyptian.—Here is a wool with many of the properties so wished for by our consumers. The staple might be long enough if the native collectors and growers did not induce the practice of twice shearing. The wool is bright, sound, and silky, but is sometimes spoiled by a sprinkling of grey hairs, also by the admixture of ill-bred, rough, fuzzy wool, known in trade as Syrian.

The Cape.—The chief remark to be made upon the wool from this district is to protest against the pernicious practice of shearing the sheep twice in the year, which altogether disqualifies it for combing purposes, and depreciates its value greatly; and it is strongly recommended to discontinue the practice of shearing until the entire length of the staple of which the wool is capable is attained.

Natal.—Considerable attention is being paid to the growth of wool in this colony, and, like New Zealand, it possesses great natural advantages.

Mogadore.—The wool of this country is deficient in lustre, kempy,* and of a brownish color, but by judicious crossing with English blood it could be brought to resemble our breeds, and find a large and remunerative market.

Canada.—The bulk of this wool appears bo be a neglected Leicester, but is capable of improvement. There is a tendency in some parts to cross the native sheep with United States merinos, but for the English market we recommend new Leicester rams, so as to impart length, lustre, and soundness to the staple. One great fault is the prevalence of burrs, which often depreciate the value five, and sometimes ten, per cent. This year's imports have been irregularly packed, consequently a manufacturer has been obliged to purchase much wool that he did not require along with that which he did want. If regular classification of the fleeces is unattainable at present, let the growers, at least, pack up the cotted and cast fleeces separately from the others.

California.—We have great hopes of this place being able to supply Europe with very large quantities of both long and short wool of medium and fine quality. At present the growth is exported almost exclusively to New York and Boston, where it enters duty free. We think, however, that Californian wool will, ere long, find its way to England. The value in New York of the unwashed fleeces varies from 6d. to 17d. per pound. The sheep farmers profess to be able to raise any breed from Leicester up to pure merino. At present there is every variety of cross, with an infusion of United States merino.

Peru.—This wool is long stapled tender wool, unfit for combing, but might be improved, and the kemp and scurf eradicated. The kemp is very prevalent. The Lima Wool is better bred, and nearly approaches a combing wool of middling quality to fine quality. Large quantities of long coarse carpet wool are shipped from Valparaiso to the United States.

The Chilian Wool is capable of considerable improvement.

Argentine Republic.—Buenos Ayres, Cordova, Entre-Rios, Santiago.—Buenos Ayres wools are chiefly short-woolled—shipped in the grease. Entre-Rios and Santiago coarse wools. Cordova is a carpet wool, and from its length capable of great improvement.

Republic of the Uraguay, or Band Oriental. Chief town, Monte Video.—The wool from this quarter chiefly consists of fine, short stapled.

New Zealand.—Large supplies of this wool have already come to England. and we believe the country is peculiarly adapted to produce the long combing wools required, from its soil and climate, and an unlimited market is open here for such wools.

Australia.—The wools from this Colony form a large article of export. They are generally of a finer character than those of the other countries referred to, and for certain purposes are exceedingly valuable.

The Application of the Manure of the Farm.

By Professor Tanner.

Sweeds and Turnips.—The farm yard manure used for these crops has very generally been applied to the land just before the last ploughing in spring; but we have many modern instances where on strong soils an effort has been made to give the soil the benefit of an early admixture of long manure. In such case, the stubble having been cleaned during the autumn, receives its allowance of dung before it is ploughed up for the winter. This practice has been found to succeed so well, that its extension is rapid upon stiff soils. Amongst the advantages which

result are, the security of the manure from loss from bad management and the favorable action exerted upon the land—points to which we have already referred. To these we may add others which are of great importance. We have every reason to believe that, in proportion as we expose our soils—and clay soils more especially—to the action of the air and changes of temperature, in the same degree do we thereby develop their properties, and bring into action fertilizing matter which would otherwise remain in the land in a dormant condition. This is equivalent to an addition of manure; for the materials of the soil which are thus rendered useful were previously existing in a condition unfit for the support of vegetation. The application of the dung before winter co-operates very powerfully in promoting this action, and we are, at the same time, adopting the surest plan for enabling the soil to absorb from the atmosphere some of the ammonia which is present there. So that not only do we thus preserve our manure from waste, but we enable the soil to develope and obtain further supplies of fertiilty; nor must we overlook the increased efficiency of the dung consequent upon its more complete distribution throughout the soil, and the superior feeding qualities of the crop.

Potatoes.—The disease which has for so many years attacked this crop renders it necessary that the use of farm-yard manure be accompained by some degree of caution. It has been observed that fermenting manures—such as dung—have a tendency to communicate decay to the plant. We have, therefore, two courses open to prevent the crop being thus injured—1st, to substitute an artifical manure possessing a preservative character, or, at least devoid of any unfavorable influence; or 2ndly, if farm-yard dung be employed, to counteract, as far as possible, its disposition to communicate decay. The latter point will be best attained by having the manure spread upon the land in the autumn and ploughed in before winter. In preparing the land for planting in the spring the manure will be well distributed through the soil; and thus, whilst the land is enriched by the dung, its natural tendency to promote decay will be diminished.

Cabbage.—In the growth of this crop the use of farm-yard manure is generally desirable, but circumstances render it advisable to apply the manure at the same time as the young plants are set out upon the land. Well-rotted dung is generally preferred, because the plant comes into full activity soon after it is planted out. The cabbage is a gross feeder, and can scarcely have too much manure when the production of large autumn cabbage is desired; but if the crop is required for spring use it must not be forced with equal freedom. As in the case of swedes and turnips so here also the slower-grown plant is the one which best withstands the severity of the winter frosts and affords the best food in the spring. This must not lead us to deprive the cabbage intended for spring use of the usual supply, but rather to take measures for its distribution throughout the soil. In this way the keeping qualities of cabbage may be very materially increased.

Beans are generally sown upon land which has received a dressing of farm-yard manure. It is customary to spread the dung over the land, which being ploughed in, the seed is either drilled or dibbled. This crop luxuriates, under the influence of manure, to a far greater degree than other corn-bearing plants which we cultivate, and hence the regularity of the practice of using manure for it. In applying dung to a corn crop there is frequently a danger of producing straw rather than corn; but with the bean this is very seldom the case. If the quality of the land is such that the dung produces haulm (or straw) to such an extent that the pods die off instead of filling with corn, we may find a simple remedy at hand by cutting off the tops of the beans with a large reaping-hook. The growth of the stalk being thus checked, the energies of the plant are at once directed to the production of seed, the blossoms cease to die from want of nourishment, and the pods are gradually developed. The position of the seed pods in the bean gives it this advantage over the other corn crops.

Wheat, Barley, Oats.—The use of dung for these crops on stiff soils is by no means extensively carried out, although there are some neighborhoods in which it is general. There is scarcely any practice which is apparently more contradictory. The employment of dung upon some soils ensures the production of a good crop of corn, but upon other land it would with equal certainty destroy all our hopes of a satisfactory yield. When we are dealing with a rich clay, it is seldom that we can venture upon applying dung for corn, as it would cause a large growth of straw, to the prejudice of the grain. Other soils of a lower standard of fertility receive the manure with manifest advantage. We cannot, however, explain the differences observed by any comparative degrees of fertility which the soils may possess; and with our limited scientific knowledge upon the subject it is not desirable to speculate upon the controlling cause. Practically we know that one farmer does not fear for his crop of corn, provided he can get straw enough; whilst on other land a good crop of corn may be confidently lood for, provided we do not get too much straw. It will be sufficient for distinguishing those soils upon which manure may be advantageously used if we say that, where the growth of the straw has to be encouraged, the application of dung may be practised; but, on the other hand, when the soil is predisposed to yield a rank growth of straw, its use is seldom, if ever safe. It is more than probable that by judiciously prepared artificial manures we shall, ere long, be able to supply our corn crops with the nourishment required for the production of grain, without that danger of an over-

growth of straw which we have to contend against in the use of dung. I am encouraged in this hope from the satisfactory results of an investigation on this subject which I am prosecuting at the present time.

When farm-yard manure is employed it is almost always succeeded by a wheat crop, the use of dung for oats or barley being very exceptional. We shall subsequently have an opportunity of seeing, even more fully than has yet been explained, that when manure cannot be applied directly to the wheat crop we may attain the desired result by allowing another crop to intervene. As an instance of this, I may mention the practice of applying dung for beans, or upon clovers, when it cannot be used for wheat. This answers a double purpose; for it promotes the growth of crops which thrive under its direct action, and these crops leave the land enriched with materials required for the wheat.

Artificial Grasses.—Upon these crops the use of dung is generally attended with highly satisfactory results, and the extension of this practice is very desirable. Advisable as the application of dung in its early stages of fermentation may be for stiff soils, when it is to be plowed into the ground, the case is different when it has to remain upon the surface. Dr. Voelcker has shown that in a well fermented sample of farm-yard manure we have the ammonia present chiefly in the form of a humate, which is readily dissolved by water, but is not volatile, and, therefore, it is well prepared for being washed into the soil as soon as rain falls upon it, but is safe from being dispelled either by the heat of the sun or the passage of the wind. For these and other reasons, the dung intended for our artificial grasses should always be carefully fermented, so that it may be rotted when spread upon the land. Upon stiff soils the autumn is the usual time of application. The valuable powers which clay soils possess for the preservation of the manure added to them renders a frequent application unnecessary, and thus we find a well manured fallow or fallow crop generally relied upon for carrying the land through its course of four or five years' tillage without additional help from the farm-yard. If, however, the fallow crop has been removed from the land, it becomes desirable and economical to apply some manure to the seeds in the manner stated. Another cause which has led to the extension of this practice is the opportunity it offers for drawing this bulky manure to the land during a period of comparative leisure, instead of delaying the cultivation for swedes by its use for the root crop. In this instance artificial manure is entirely relied upon for the root crop, and thereby a considerable saving of time and labor is effected during this urgent and critical seed time.—*Journal of Royal Agricultural Society of England.*

Flax Culture.

We are indebted to John A. Donaldson, Esq., Canada Government Emigration Agent at Belfast, Ireland, for a copy of the following valuable instructions in regard to the culture and management of flax, which, especially as we have lately received a considerable number of inquiries on the subject, we have much pleasure in laying before our readers :—

The North East Agricultural Association of Ireland.

Directions for the Proper Management of the Flax Crop, originally compiled by the Committee of the late Royal Flax Improvement Society; Revised by the Special Committee of the North-East Agricultural Association of Ireland, for promoting the Growth of Irish Flax. Belfast, March, 1860.

Soil and Rotation.—By attention and careful cultivation, good flax may be grown on various soils; but some are much better adapted for it than others. The best is a sound, dry, deep loam. It is almost essential that the land should be properly drained and subsoiled; as, when it is long saturated with either underground or surface water, a good crop need not be expected. The subsoiling should be executed the year of the green crop, so as to be completed at least two years before the flax is grown.

The best rotation is to grow after wheat, on average soils; but on poor soils, where wheat does not succeed, it is often better to grow after potatoes. Flax should on no account be grown oftener than once in five years, and once seven is considered safer.

Any departure from this system of rotation is likely to cause loss and disappointment.

Preparation of the Soil.—One of the points of the greatest importance in the culture of flax, is by thorough draining, and by careful and repeated cleansing of the land from weeds, to place it in the finest, deepest and cleanest state. This will make room for the roots to penetrate, which they will often do to a depth equal to one half the length of the stem above ground.

After wheat, one ploughing may be sufficient on light, friable loam, but two ploughings are better; and on stiff soils, three are advisable—one immediately after harvest across the ridges, and two in Spring, so as to be ready for sowing in the first or second week of April. Much will, of course, depend on the nature of the soil, and the knowledge and experience of the farmer. The land should be so well drained and subsoiled, that it can be sown in flats, which will give more even and much better crops. But until the system of thorough draining be general, it will be advisible to plough early in Autumn, to the depth of six or eight inches. Throw the

land into ridges, that it may receive the frost and air; and make surface drains to carry off the rains of Winter. Plough again in Spring, three or four inches deep, so as to preserve the Winter surface for the roots of the flax. The Spring ploughing should be given some time before sowing, to allow any seeds of weeds in the land to vegetate, and the harrowing in of the flax seed will likely kill them, and save a great deal of after weeding. Following the last harrowing it is necessary to roll, to give an even surface and consolidate the land, breaking up this again with a short-toothed or seed harrow, before sowing, which should be up and down, not across the ridges, or anglewise. These operations can be varied by any skilful farmer, to suit peculiar soils or extraordinary seasons. The object is to have clean, fine soil, as like as possible to what a garden soil should be.

Rotation recommended by a gentleman of considerable experience:

Average Soils.	*Poor Soils.*
1. Grass.	1. Grass.
2. Oats.	2. Oats.
3. Potatoes or Turnips.	3. Potatoes.
4. Wheat.	4. Flax.
5. Flax.	5. Hay.
6. Clover.	

Sowing.—The seed best adapted to the generality of soils is Riga, although Dutch has been used in many districts of county for a series of years with perfect success, and generally produces a finer fibre, but not so heavy a crop as Riga. In buying seed, select it plump, shining, and heavy, and of the best brands, from a respectable merchant. Sift it clear of all the seeds of weeds, which will save a great deal of after trouble, when the crop is growing. This may be done by farmers, and through a wire sieve, twelve bars to the inch. Home-saved seed has produced excellent crops, yet it will be best, in most cases, to use the seed which is saved at home for feeding, or to sell it for the oil mills. The proportion of seed may be stated at one Riga barrel, or three-and-a-half imperial bushels to the Irish or plantation acre; and so on in proporiion to the Scotch or Cunningham, and the English or Statute acre. It is better to sow rather too thick than too thin; as. with thick sowing, the stem grows tall and straight, with only one or two seed capsules at the top; and the fibre is found greatly superior, in fineness and length, to that produced from thin-sown flax, which grows coarse and branches out, producing much seed, bnt a very inferior quality of fibre. The ground being pulverized and well cleaned, roll and sow. If it has been laid off without ridges, it should be marked off in divisions, eight to ten feet broad, in order to give an equable supply of seed. After sowing, which should be done by a very skilful person, as the seed is exceedingly slippery, and apt to glide unevenly from the hand, cover with a seed harrow, going twice over it—once up and down, and once across or anglewise, as this makes it more equally spread and avoids the small drills made by the teeth of the harrow. Finish with the roller, which will leave the seed covered about an inch, —the proper depth. The ridges should be very little raised in the centre, when the ground is ready for the seed, otherwise the crop will not not ripen evenly; and when land is properly drained, there should be no ridges. Rolling the ground after sowing is very advisable, care being taken not to roll when the ground is so wet that the earth adheres to the roller.

Weeding.—If care has been paid to cleansing the seed and the soil, few weeds will appear; but if there be any, they must be carefully pulled. It is done in Belgium by women and children, who with coarse cloths round their knees, creep along on all fours. This injures the young plant less than walking over it, (which, if done, should be by persons whose shoes are not filled with nails.) They should work, also, facing the wind, so that the plants laid flat by the pressure, may be blown up again, or thus be assisted to regain their upright position. The tender plant, pressed one way, soon recovers; but if twisted or flattened by careless weeders, it seldom rises again. The weeding should be done before the flax reaches six inches in height.

Pulling.—The time when flax should be pulled is a point of much nicety to determine. The fibre is in the best state before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable; and if pulled too late, the additional weight does not compensate for the coarseness of the fibre. It may be stated that the best time for pulling is, when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying and suffering from wet, it should be pulled as soon as possible, and kept by itself. So long as the ground is undrained, and imperfectly levelled before sowing, the flax will be found of different lengths. In such cases pull each length separately, and if possible, keep it separate in the pool. Where there is much second growth, the flax should be caught by the puller just underneath the bolls, which will leave the short stalks behind. If the latter be few, it is best not to pull them at all, as the loss from mixture and discoloration by weeds would counterbalance the profit. If the ground has been thorough drained, and laid out evenly, the flax will likely be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course, to the grower. who will be amply repaid by an additional price for his extra trouble. Let the handfuls of pulled flax be laid across each other diagonally, to be ready for the

RIPPLING, which should be carried on at the same time, and in the same field, with the pulling. If the only advantage to be derived from rippling was the comparative ease with which rippled flax is handled, the practice ought to be adopted; but, besides this, the seed is a very valuable part of the crop, either for the oil mill or for feeding purposes at home. The apparatus is very simple. The ripple consists of a row of iron teeth screwed into a block of wood. This can be procured in Belfast, or may be made by any handy blacksmith.* It is to be taken to the field, where the flax is being pulled, and screwed down to the centre of a nine-feet plank, resting on two stools. The ripplers may either stand or sit astride at opposite ends. They should be at such a distance from the comb as to permit of their striking it properly and alternately. A winnowing sheet must be placed under them, to receive the bolls as they are rippled off; and then the ripplers are ready to receive the flax just pulled, the handfuls being placed diagonally, and bound up in a sheaf. The sheaf is laid down at the right hand of the rippler, and untied. He takes a handful with one hand, about six inches from the root, and a little nearer the top with the other. He spreads the top of the handful like a fan, draws the one half of it through the comb, and the other half past the side; and, by a half-turn of the wrist, the same operation is repeated with the rest of the bunch. Some, however, prefer rippling without turning the hand, giving the flax one or two pulls through, according to the quantity of bolls. The flax can often be rippled without being passed more than once through the comb. He then lays the handfuls down at his left side, *each handful* crossing the other, when the sheaf should be carefully tied up and removed. The object of crossing the handfuls so carefully, after rippling, when tying up the beets for the steep, is that they will part freely from each other when they are taken to spread out on the grass, and not interlock and be put out of their even order, as would otherwise be the case. If the weather be fine, the bolls should be kept in the field, spread on winnow-cloths, or other contrivance for drying; and if turned from time to time, they will soon dry. Passing the bolls first through a coarse riddle, and afterwards through fanners, to remove straws and leaves, will facilitate the drying. If the weather be moist, they should be taken in-doors, and spread out thinly and evenly on a barn floor or on a loft, leaving windows and doors open to allow a thorough current of air, and turned twice a-day. When nearly dry, they may be taken to a corn kiln (taking care not to raise it above summer heat), and carefully turned until no moisture remains. By the above plan of *slow* drying, the seed has time to imbibe all the juices that remain in the husk, and to become perfectly ripe. If it be taken at once from the field, and dried *hurriedly* on the kiln, these juices will be burned up, and the seed will become shrivelled and parched, little nutritious matter remaining. In fine seasons, the bolls should always be dried in the open air, the seed threshed out, and the heaviest and plumpest used for sowing or crushing. The light seeds and chaff form most wholesome and nutritious feeding for cattle. Flax ought not to be allowed to stand in the field, if possible, even the second day; it it should be rippled as soon as pulled, and carried to the water as soon as possible, that it may not harden.

WATERING.—This process requires the greatest care and attention. River water is the best. If spring water must be used, let the pond be filled some weeks before the flax is put in, that the sun and air may soften the water. That containing iron or other mineral substances should never be used. If river water can be had, it need not be let into the pond sooner than the day before the flax is to be steeped. The best size of a steep pool is 12 to 18 feet broad, and $3\frac{1}{4}$ to 4 feet deep. Place the flax loosely in the pool, in one layer, somewhat sloped, and in regular rows, with the root end underneath; the tie of each row of sheaves to reach the root of the previous one; cover with moss sods, or tough old lea sods, cut thin, laid perfectly close, the sheer of each fitted to the other. Before putting on the sods, a layer of rushes or ragweeds is recommended to be placed on the flax, especially in new ponds. As sods are not always at hand, a light covering of straw may do, with stones laid on it, so as to keep the flax just under the water; and as the fermentation proceeds, additional weight should be laid on,—to be removed as soon as the fermentation ceases, so as not to sink the flax too much in the pool. Thus covered, it never sinks to the bottom, nor is affected by air or light. A small stream of water, allowed to run through a pool, has been found to improve its colour. It will be sufficiently steeped, in an average time, from eight to fourteen days, according to the heat of the weather and the nature of the water. Every grower should learn to know when the flax has had enough of the water, as a few hours too much may injure it. It is, however, much more frequently *under*-watered than *over*-watered. The best test is the following:—Try some stalks, of average thickness, by breaking the *shove*, or woody part, in two places, about six or eight inches apart, at the middle of the stalk; catch the broken bit of wood, and if it *will pull freely out, downwards, for that length, without breaking or tearing the fibre, and with none of the fibre adhering to it*, it is ready to take out. Make this trial every six hours, after fermentation subsides, for sometimes the change is rapid. Never lift the flax roughly from the pool, with forks or grapes, but have it

*The best ripples are made of half-inch square rods of iron, placed with the angles of iron next the ripplers, 3-16ths of an inch asunder at the bottom, half an inch at the top, and 18 inches long, to allow a sufficient spring, and save much breaking of flax. The points should begin to taper three inches from the top.

carefully handed out of the flax drain by men standing in the water. It is advantageous to let flax drain twelve to twenty-four hours, after being taken from the pool, by placing the bundles on their root ends, close together, or on the flat, with the slop; but the heaps should not be too large, otherwise the flax will be injured by heating. The flax water can be either used as liquid manure for meadows, or kept in the pool till the first flood,—it should not be run off into the river when thr water is very low, as the odour is very unpleasant, and the water thus impregnated is poisonous to fish, and contrary to law,—see Fisheries Act, 5 and 6 Vic., c. 106.

Spreading.—Select, when possible, clean, short, thick pasture ground for this operation; and mow down and remove any weeds that rise above the surface of the sward. Lay the flax evenly on the grass, and spread thin and very equally. If the directions under the head of rippling have been attended to, the handfuls will come readily asunder without entangling. Some people recommend turning it on the grass with a long rod, which is not, however, generally done in Ireland.

Lifting.—Six to eight days, if the weather be showery, or ten to twelve, if it be dry, should be sufficient on the grass. Ten days may be taken as an average in ordinary weather. A good test of its being ready to lift is to rub a few stalks from the top to the bottom; and when the wood breaks easily, and separates from the fibre, leaving it sound, it has had enough of the grass. Also, when a large proportion of the stalks are perceived to form a *bow and string*, from the fibre contracting and separating from the woody stalk. But the most certain way is, to prove a small quantity with the hand-break, or in a flax mill. In lifting, keep the lengths straight and the ends even, otherwise great loss will occur in the rolling and scutching. If heavy dews or damp weather prevail, don't lift after 3 o'clock, p.m. Let it be set up to dry for a few hours, and afterwards tie it up in small bundles; and, if not taken soon to be scutched, it will be much improved by being put up in small stacks, loosely built, with stones or brambles in the bottom to keep it dry, and allow a free circulation of air. Stacks built on pillars would be the best.

Drying, by fire, *is always most pernicious*. If properly steeped and grassed, no such drying is necessary; but to make it ready for breaking and scutching, exposure to the sun is sufficient. In some districts it is put to dry *on kilns* in a damp state, and is absolutely burned before it is dry, and the rich oily appearance of the flax is always greatly impaired.

Breaking and Scutching.—If done by hand, try the Belgian system, which is considered superior to that practised in Ireland. If by milling, the farmer will do well to select those mills in which good machinery has been introduced; and it is to be hoped that, ere long, by further improvements, increased economy in these establishments will be attained.

The Courtrai System.—This mode of preparation requires to be very carefully executed, as inattention will reduce the value of the straw, and yield inferior fibre. When made up for drying in large sheaves, the straw is much injured, the outside stalks being much discoloured by the heat of the sun before the inside of the sheaf is dry. The flax stems should be put together in bunches, about one-half larger than a man can grasp in one hand, spread a little, and laid on the ground in rows after each puller; the bunches laid with tops and roots alternately, which prevents the seed bolls from sticking to each other in lifting. It should be stooked as soon after pulling as possible, and never allowed to remain over-night unstooked, except in settled weather. The stooking should go on at the same time as the pulling, as, if flax is allowed to get rain while on the ground, its colour is injured. A well-trained stooker will put up the produce of a statute acre or more, in good order, in a day, with two boys or girls to hand him the bunches. The flax should be handed with the tops to the stooker. The handfuls, as pulled, are set up, resting against each other,—the root ends spread well out, and the tops joining, like the letter A. The stooks are made eight to ten feet long, and a short strap keeps the ends firm. The stooks should be very narrow on the top, and thinly put up, so that they may get the full benefit of the weather. In six or eight days at most, after being pulled, the flax should be ready for tying up in sheaves of the size of corn sheaves. It is then ricked, and allowed to stand in the field until the seed is dry enough for stacking. To build the rick, lay two poles parallel on the ground, about a foot asunder, with a strong upright pole at each end. The flax is then built, the length of a sheaf in thickness or breadth. The bottom poles should be laid North and South, so that the sun shall get at both sides of the rick during the day. In building, the sheaves should be laid tops and roots alternately, built seven to eight feet high, and on the top a single row of sheaves lengthwise, or across the others, and then another row as before, but with the tops all the same way, which gives a slope to throw off rain; finish by putting on the top a little straw tied with a rope. In this way, if properly built, it will stand secure for months, or it can be put in a barn, if preferred; in either case, the seed is to be taken off during the winter, and the flax steeped in the following May.

Note.—In arranging the foregoing directions for the management of the flax crop, we have adhered very closely to the original text of the late Royal Flax Improvement Society. The few alterations and abbreviations we have thought desirable, are, in our opinion, required to sim-

plify the subject, and thus make a little more plain the details of judicious cultivation.

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Farming in Flanders.

[The following account of Flemish farming is both suggestive and interesting, affording the reader a correct idea of the state of the Agricultural art in one of the most highly cultivated countries of Europe. It is a contribution from the pen of D. Emile de Laveleye to the French *Revue Deux des Mondes*, with a few concluding sentences by an English Agriculturist.]

We are in Waesland, in Eastern Flanders, on the north of the river Scheldt, between Antwerp and Ghent. The first appearance is of being in the midst of a forest; and the roads are planted, all the fields are surrounded, and all the ditches are bordered with trees, which, driving their roots into the one side, and the muddy water of the great drains on the other, display a most refreshing appearance of fresh growth. There are no hills to break the monotony of the flat, fertile, peaceful plain. At intervals along, and parallel to the road, the farm-houses rise from the midst of orchards of great apple-trees. Tacitus observed that "the Germans lived in detached dwellings, unlike the Latins, whose villages are formed of rows of houses," and his picture is here to this day. The farm-house is low, of one story, built of bricks carefully painted white or of some bright color, with the shutters of a deep green. The roof is thatched. A path paved with bricks leads up to the door through a garden gay with dahlias and gilliflowers, and through the white curtains of the window may be seen the bright colors of the pot flowers, which latest horticultural shows of Ghent have made the fashion. The cottage generally consists of four rooms, the largest being used as a living-room; in the second butter is made and the food of the cattle cooked; the two others are bed-chambers. Scrupulous cleanliness and neatness prevail not less in the hut of the poor laborer than in the house of the rich farmer. The ancient furniture—the oak-cased clock, the wardrobe, the white wood dresser—all show the care of the housewife. Plates gay with flower pictures adorn the mantlepiece of the grate of the huge fire place and the shelf of the dresser. The iron work of the churn and the copper vessels shine brightly in the sun. The walls are whitewashed every year before the fair (*kermesse.*) In the farm-yard everything is equally neat; the dung-hill and liquid-manure pit are under the roof of the cow-house. There, too, five or six huge cows with swelling udders are sedulously attended on by the farmer's wife. In summer they get plenty of green fodder; in winter, straw, hay, and a sort of hot soup of turnips, carrots, beet roots, oilcake, bran, and rye flour or malt. The agricultural implements in use are a light swing-plow, drawn by one horse; harrows of a triangular, rectangular, and parallelogram form; barrels mounted on wheels for distributing liquid manure. But the special implement of the Flemish agriculturist—the implement with which he has fertilized sands, drained marhses and reclaimed thousands of acres from the sea—is the spade. They have a proverb which, as written is almost English —"*De spa is de goudmyn der boeron*" (the spade is the gold-mine of the boor or peasant.) The spade of the Waesland, intended to work in a light, well cultivated soil, is of wood, with an iron casing on the blade. Even on very small farms the plow is used as well as the spade; but the spade is employed to give the last finish to the preparation of the soil, to throw it into heaps for winter's frost to soften it, or into beds two or three yards wide divided by narrow channels, The fields are invariably of a regular shape, square or a right angled triangle, and seldom more than 2½ acres in extent. The arable land is thrown up in the centre, and slopes to the sides, so that water may flow from it evenly. On each side of the arable land, but a foot lower, is a border of turf ten or twelve feet wide; still lower is a plantation of underwood, which is cut every seven years. Lastly, the field is enclosed by a ditch, bordering with forest trees The arable land is on an average seven feet higher than the ditch. This helps to make it perfectly dry. These ditches are indispensable, in a low flat damp country, to receive the rainfall. In cutting them, the "spoil" is used to raise the level of the arable land. Thus each enclosure supplies annual crops, grass, which is watered by the overflow of liquid manure from the arable land—fire wood every seven years, and timber fit for building every thirty years. The arable land is usually worked with the plow; but every six or seven years it is dug over, the subsoil being carefully spread over the surface which has borne the last year's crop, the subsoil being supposed to have had the benefit of a fallow and a filtration of the manures applied to the surface. The consequence is, that arable land acquires a greater depth than even that of vegetable gardens. The chief produce is not grain, but flax and and butter. The best farmers do not sell any corn—they give it all to their live stock.

Rye and potatos are grown on the poorest land, and form the principal food of the agricultural classes of the greater portion of Flanders. The Germans are so fond of rye, that they cultivate it in preference to wheat, even on strong clay land. It also yields in Flanders, where the soil seems particularly favorable to it, upwards of ten per cent. more than wheat; it ripens earlier, and

thus leaves more time and room for the stolen crops, which form a leading feature of Flemish peasant agriculture; and the straw is preferred for thatch Wheat requires much manure, and often does not pay the expense of cultivation. Wheat, therefore, is chiefly confined to the district of strong and land large farms. Barley yields an excellent crop, and beer is the drink of the country. Potatos occupy ten or twelve per cent. of the arable land. Oats are a favorite crop. Buckwheat is liked, because it requires no manure. In the sandy or small farm regions 35 or 40 per cent. of arable land is employed in growing green crops, either as a first or second crop. These, with the natural and artificial meadows, give a return of more than half the land devoted to crops which yield meal and manure. Without a liberal application of these, lands would soon return to the condition of waste heaths. Artificial fields of lucerne have not succeeded. Common clover mixed with rye-grass, and red clover, are used instead. The damp climate suits permanent pasture; but the soil is generally too poor, in the region we are particularly describing. Formerly the cottage farmers not only grew flax, but spun it with distaff, and wheel; machinery has absorbed that employment; but the rotting, the stripping the flax plant, weaving the thread, distributes a considerable sum in wages amongst the laboring population. The decline of the linen trade has been recently compensated by a great export of linen thread to England and France. The cost of flax growing, in manure, labor and seed, is calculated at about $65 per acre. Every farmer grows tobacco for his own consumption. But in certain districts a fine quality is obtained. Hops are cultivated with great care and success. They water with liquid manure as soon as the leaves begin to grow yellow. Unlike our hop districts, where everything is sacrificed to one plant, the finest crop of wheat and roots are found in the hop districts. Amongst other crops, chickory, used instead of coffee, rape, and other plants, are grown to make oil cake. The number of stock maintained per acre is large, but mere figures carry a very imperfect impression on this point. M. de Lavergne's calculation has 33 horned stock, 6 horses, and 200 sheep for every 2½ acres in England, and in the whole of Flanders 55 horned cattle, 12 horses, and 8 sheep. The French author reduces the English sheep to cattle at 8 to 1, and this gives 64 head in Flanders per 2½ acres. But he also observes that the cattle are chiefly for the dairy; that "in consequence of the want of pasture, and the very small consumption of meat by the working classes, very little meat is grown—except in the large farm districts of the coast;" and that, "while the number of sheep diminishes, a great number of goats—50,000 in the province—are kept by farmers too poor to keep a cow." Since the demand for butter for export to England has so largely increased, the number of sheep has steadily diminished. The French author labors under the erroneous idea that the same result has followed high farming in England; but we all know the reverse is the fact, the number of sheep fed having steadily increased in England for the last ten years.

It must also be observed that any comparison betwen the stock fed in England, and on the continent, will be very deceptive, if taken in the usual manner by numbers. Our live stock are so much heavier, so much more valuable to the butcher, and so much earlier matured, that it is no exaggeration to treat them as worth double the live stock of France, Germany, and Flanders —although in dairy-produce Flanders and Holland excel us, not for the superiority of their stock, but the superiority of their management, and in certain districts, of their grasses.

Management of Poultry.

The following observations on the general treatment of Poultry are taken from a recent work published in Edinburgh, entitled "The Henwife," by Mrs. Fergusson Blair, a highly accomplished lady, who takes great interest and has had extensive experience in the treatment and management of Poultry. Her book is said by competent authority to be a gem of its kind.

"The best guide is nature, and we should always follow her as closely as possible in the treatement of our stock. Fowls are almost grazing animals, and pick up grass, or any green food, in quantities. If, therefore, you cannot give them complete liberty, and this is imposisble where large numbers and several varieties are kept, you should at all events allow them a daily run in a grass park. One hour's liberty is sufficient to keep them in health, and their enjoyment of this boon is so great, that, even were there no other reason, that should be sufficient inducement for you to give them their little bit of happiness, even at the expense of trouble to yourself. It is astonishing how soon fowls accommodate themselves to the regulations of the establishment. A day or two suffices to make them acquiesce in all our wishes, and enables them to recognize without apparent difficulty their respective yards. Fowls seem to understand the value of their hour's play, and lose no time the trap once opened, in availing themselves of it; they rush to the grass and never cease picking it, until driven home. Great care must be taken that one set is put in before another is let out. This demands hourly attention, as, by one moment's carelessness in allowing breeds to mix, hopes, for a whole season may be destroyed. If there are several yards of the same breed, these to save time, may be allowed to enjoy each other's society during their run, as a *faux pas* in their case, though not advisable, need not be fatal—but *never* let out different varieties together. One single *mesalliance* will ruin the purity of the breed. *At no season* of the year should hens be allowed to associate with the male bird of a different variety, and if *super-eminent* excellence is desired, not even with an inferior one of the same.

While the fowls are enjoying their grass run, their yards may be dug over. Twice a week is not too often for this operation. Occasionally a little of the soil may be pared off, and fresh sand strewed in its place. At all times, perfect cleanliness in yards and houses, should greet the eye of the lady visitor—it is *the* grand requisite. At the risk of appearing didactic, I must insist upon a *sine qua non* in a poultry establishment, great or small, be it that of the 'laird,' or that of his 'tenant.' I do not say with some writers, 'If the floor of the fowl house be cleansed every morning, so much the better,' but I say, 'It *must* be done,' and scupulously so, too. If the floor is as hard as it ought to be, a birch broom is the best implement that can be used for this purpose. The supply of water must be copious and of the purest description, and the dust-bath always provided with ashes for the use of the fowls. They love to roll themselves in this, scattering the contents over their feathers, to the effectual discomfort and dislodgement of all parasites. A heap of lime rubbish, or old mortar, should be placed in a corner in each yard—poultry are fond of it, and it is conducive to their health. Once a-year the interior of the houses and nests should be limewashed, and the floor saturated with same mixture. This keeps all perfectly pure and free from taint. It is good, during warm weather, occasionally to sprinkle water from a watering-can over the perch and in its vicinity, scattering a little sulphur over the wetted parts. This ought to, and in a great measure does, prevent the appearance of any obnoxious animalculæ, which, too often, in even well-regulated establishments, make their way good, to the torment of the occupants and their attendants. Depend upon it, the more we attend to the comfort of our domestic animals, the more they will repay our care.

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To the farmer (and I hope to number many among my readers), I would give the following advice. In spring, purchase a Brahma Pootra cock and four hens; set every egg. From these, keep all the pullets, and kill off the cockerels. In autumn, sell or exchange the adult Brahma cock for a large grey Dorking, and your yard will then be stocked for the season. If you can board out the Brahma cock, he will again be of use the following spring, with your adult Brahma hens; but, on no account must he be allowed to remain in your own yard with the pullets. A cottager, for a remuneration, will gladly take charge of the pen, and rear as many chickens as is desired for carrying on the system. In this way, your original stock will supply your yard for several seasons. From thirty Brahma pullets, you will have above ten dozen eggs per week all winter; and the cross with the Dorking produces the finest possible chickens for market, but not to breed from. Pure Brahmas alone must be kept for that purpose; I have always found the second cross *worthless*. As Brahmas do not so constantly show a desire to incubate, their period of laying being much more extended than that of Cochins, a few of these hens, (not the leggy, tucked up looking things, so often called such, but short-legged, compact, well-feathered birds), many with advantage he kept, to act as mothers; they sit early, and are capital nurses. Farm yards are seldom stocked with profitable poultry; in them, too often, is the pernicious adherence to the system of breeding in and in seen, in its worst aspects; the result is *certain* degeneracy. Farmers look upon poultry as a trifling and unimportant item in the farm stock, only to be kept as layers of eggs during summer, and are quite satisfied if their chickens bring a fair market price. But why not rear fowls that will weigh eight instead of four pounds? and at the same cost of feeding. Surely such weights will command higher prices than merely those of the market, which is often supplied with birds scarcely worthy of the name of fowls. Creatures of every conceivable form and color, with long black legs, narrow breasts, and twisted breast-bones, certainly possessing a superabundance of tail, but that adornmentgoes for little in the cook's eye. These miserable results are by no means the consequence of want of food; a farm yard is the paradise of poultry, and nowhere can they live in greater comfort or plenty. It is just because the birds want frame, on which to put flesh and fat; bone is deficient; and all the lap's full of oats, barley and wheat, which the farmer's wife may filch for them from the gude-man's barn, are wasted on a worthless crew. Let the farmer test the merits of my advice by his own practical experience, and I am not afraid of an adverse opinion. Poultry ought to pay him if anybody; they have the advantage of the gleanings of the stack-yard, and at times are almost independent of any extra feeding. Should the farmer be an exhibitor, he must, of course, submit to some expense in carrying out his hobby. High feeding must then be *the rule*. Exhibition fowls require more than ordinary care and trouble. Money may have been invested in the purchase of prize pens, at enhanced prices, but he may look for his return in the constant pleasure they afford him, and in being the envied winner of a "silver cup."

Hints about Shearing Sheep.

John Prodert, in the *Ohio Farmer*, gives the following practical hints relative to shearing sheep, which at this time are very seasonable:

"Shearing sheep is an operation very few know how to perform well. There are several reasons for this. It seems useless to take pains to learn to do well. It has to be done but once a year, and the interval is so long, that what they learn this year will be forgotten next, so it is got through with as soon as possible. This should not be; shearing should be considered as

much a trade, and as well learned as the carpenter trade.

It is often the case, when boys begin to shear, that the father forgets the old but sensible couplet:

Neither wise men nor fools,
Can work without good tools.

The boy must take the old shears, used for tagging three or four years, with the assurance that he must use them till he knows how to take care of a new pair. In seven cases out of ten, this course so discourages the boy that his desire to learn to shear ceases. Another reason for bad shearing is this: When farmers hire their shearing done, they want too much done in a day, forgetting that wool is money as well as time. The employer pays the shearer $1.50 per day; he wants him to shear from forty to fifty sheep. He is pleased at night to know that he has got so much done, and that the shearer has earned his money. He forgets that he has lost enough in wool left on the sheep, to pay for the day's work.

Suppose he shears forty sheep, and leaves two ounces of wool on each of them (which is often the case) which taken off would amount to $1.50. Much of the work that is laid to rats, might be avoided if farmers would tell their shearers to do their work well, if they did not do so much.

I have sheared from one to five hundred sheep each season for ten years, and like the business so well that I always long for shearing time to come. I will give a few hints needed to make good shearing.

The operator must have a good pair of shears. He must know how to keep them in order, for it is very certain that a dull tool makes poor work. Good, sharp, bright shears, not too sharp pointed, will run smooth. The spring should not be so limber as to double over the wool nor too stiff so as to make the wrist lame. With skill, a steady nerve, and an even temper, it can be made to do good work.

There are various opinions in regard to position. Some shear on the floor, others use a bench. Good work may be done either way; I prefer using a bench. In all cases, the operator should hold the sheep in the easiest possible position, and keep the skin tight so as to make a smooth surface to prevent cutting the skin, causing the sheep to kick, or tear the fleece, and so exert their strength as to injure them and sometimes to cause death. This can and ought to be avoided."

Costwold Sheep in Old Times.

In reference to the different breeds of sheep, the *Maine Farmer* observes:—

"In regard to the Costwold breed, the earliest account we have seen of them is in Young's Annals of Agriculture, vol. 6, published in 1786. In a 'Tour to the West,' as the editor calls one of his journeys, getting into the Cotswold country on passing the vale of Gloucester, he says: Rising to the Cotteswold hills, I enter a much poorer country. At Stockhold I found much land beast ploughed, and burnt for turnips, which, with spreading the ashes, cost 18s per acre. They reckon it the best of husbandry, and the only means of converting these poor thin soils to any profit; do it after laying six or eight years. That I saw had been down eight years, but had not been sown with any seeds, which was shameful. Farms throughout the hills are large of necessity; for every man depending, in a great measure, for corn on his flock of sheep renders great occupations necessary. They have some farmers worth £20,000.

* * * The principal object in the country is their sheep, which are good, and bear longer wool than any breed I know, on such poor hills. It is an exception to common rules, which seem to proportion the length of the fleece to the richnesss of the pasture. Their wool is six or eight inches long, in large flushy fleeces of five to eight pounds, and sells at 7d a pound. The sheep are about 20 pounds a quarter, fat; some I heard of which rise to 28 pounds.

'In the breed they are not without some pride in excelling their neighbors. Mr. Hains, of Ballingworth, has sold rams at ten or twelve guineas each. The flock lambs are sold in September, the lowest price 7*l* a score, the highest, 16*l* and 17*l*.'

The present breeds of Costwolds that we now have, are descendants of the flocks thus described by Young, but have been improved by judicious breedings and crossings, under experienced flock-masters.

How Roots Feed.—Can the roots of plants take up only such substances as are dissolved in the ground and thus prepared for them, or can they themselves dissolve them?

This question has been solved by Liebig, and by experiments before the Society of Natural Science, in Carlsruhe, he has proved that the roots of plants, by giving forth some acid, probably carbonic acid, do dissolve the alkali, ammonia, and phosphorus in the soil. Dr. Schimper showed the meeting, as a further proof of Liebeg's doctrine, some pebbles which evidently had been eaten into by roots of plants. The fact was visible; the process, however, is not yet clear.

This valuable discovery of the great chemist goes clearly to show us why the rains and floods cannot wash out of the ground the substances forming the food of plants; on the contrary we now know that the earth takes from the liquids which touch it, and solidly appropriates substances which the roots of the plants again absorb by their action. In the same way we clearly perceive how plants can draw from the soil substances which are solid, and which are not soluble by water.

Feeding the Farm Horse.

W. G. Campbell, of Garrard county, Ky., in the *Louisville Journal* makes the following observations on the feeding of farm horses :

In ascertaining the most economical mode of feeding the farm horse, we will premise that that food which is procured with the smallest amount of labor and capital, and adds most to the strength, health and condition of the horse is the most economical. If the horse be kept in actnal service and labor, cut oats and corn in the cob, with hay, constitutes cheap, healthy, and strengthening food, and I have no doubt is the most economical method of feeding ordinarily. Oats should always be cut up—cut for the horse to the band, and you will leave a portion in fine condition to be fed to cattle. Three bundles thus cut constitute a good feed, with eight ears of corn and hay; and if hay is not convenient, by letting the horse run out at night and pick grass, or such rough fodder as is fed to cattle, he will keep in fine flesh and extra condition. The low price of horse feed would not pay for labor bestowed upon it unless it be in time of great scarcity of food. The food of horses, however, should be varied, so as to prevent cloying, but oats are extremely agreeable to the horse, and he rarely, cloys upon them. Cut straw or oats, wheat or rye made wet, and rye meal mixed with it by pouring in the meal and constantly stirring the straw, makes a fine feed as an alterative, but should not be fed freely to any breeding animal. Such feed acts finely upon the bowels and skin, and may be used to advantage in all cases of costiveness. But one of the most palatable and healthy feeds for the horses, especially if he be failing in his appetite, is a small quantity of shelled oats, say a quart for a horse in delicate health, or a gallon for a horse inclined to costive habits, placed in a pail, with warm water poured over them (or it may be boiling) and sufiered to stand and absorb the water, and give when cool. Take care to pour only so much water as to wet the oats moderately. Any horse that will eat at all will eat it. Its action upon the bowels will be fine, which will be told by the sleek and healthy appearance of the hair.

Agricultural Intelligence.

Agriculture in Nova Scotia.

Hitherto agriculture has occupied a subordinate position in this Province to the fisheries and mercantile pursuits. The consequence has been that large annual importations of farm produce had to be made in order to meet the wants of the population. The fisheries of late years have proved less productive, and public attention appears now to be directing itself more to the agricultural resources of the country. The Halifax *Morning Chronicle* remarks as follows:

From all sections of the Province intelligence reaches us of increased activity in farming operations. Of seed sown in places that have long lain fallow. And of many beginners who have placed their hands to the plow, abandoning other, and more uncertain pursuits, for the independance of the thrifty farmer. We are pleased to learn of the turning of fresh soil; or of that long disused; and of such acquisitions to the ranks of our sturdy tillers of the soil as will largely increase our agricultural products. This unwonted activity is mainly owing to the prospect of a long and uncertain war in the "States,' and a consequent neglect of the usual farming operations. But thehostile armies must be fed, and in preparing for a largely increased demand our farmers have done wisely. Aside from the immediate result of obtaining high prices for every discription of produce, we trust that the stimulus thus given to agriculture throughout the Province will be lasting. It is evident that too many are engaged in professional and commercial pursuits, and too few have devoted themselves to agriculture. We import yearly large quantities of breadstuffs and provisions, when the demand might be more fully met at home. The money, which otherwise would go abroad, would thus be retained, and used in establishing manufactories, and in the thousand and one ways which a country like this demands. It is quite evident, so far as our observation extends, that in order to secure emigration, and the advancement of the Province to the position of wealth and importance for which it has been so liberally provided by nature, that there is much to be done. Many roads to be opened, mail routes established, saw mills built, and manufactories set in operation, which are so essential, and indeed, we may say indispensable, to meet the wants of the incoming emigration. In order to do this, we must accumulate capital. And we know of no surer and speedier mode of accomplishing this than by increasiug our exports, diminishing our imports, and rendering the productions of the country more nearly equal to home consumption.

Progress in Agricuture.—When we turn to the progress of Agriculture, its steam-ploughs, steam thrashing machines, and improved methods of management, we find there is only a comparatively small beginning made and much still to do. It is shown that by proper management and well directed labor, even without any special or new appliances, the ground in the neighborhood of the metropolis might be made to produce five

times the present average quantity of produce. It is evident, therefore, that a great deal has yet to be done in this direction. In spite of the chemical knowledge which has been brought to bear on this subject in parts of England, some not far distant from London, the same methods are in use as were employed two centuries ago. Nevertheless, steam is making considerable progress, too, in agricultural manufactures, here and there, throughout the country. In the improvement of varieties of crops much has been done. There seems to be here a boundless field for culture. The grains and roots, as well as the sheep and cattle of recent years, are, many of them, enormeous in size compared with those of past years, and there really would appear to be scarcely any limits in this, as well as in other directions connected with agriculture. We do believe that vegetable and animal life can be either enlarged or diminished almost to any extent by patient and long-continued culture and selection—that sheep could be enlarged to the size of cattle on the one hand, or dwindled to the size of lap-dogs on the other, by breeding and selection. How can the old "oaks and pines" of the Chinese and Japanese, dwindled to a few inches in height, have been produced but by long-continued selection of the smallest trees, and the smallest seeds, reiterated over and over, till the dwindling process was accomplished? And so with the enlargement of Animal produce: how have the enormous swine and other animals of the modern farm been produced but by some such system of breeding and selection? Here, we say, there is a vast field for improvement, even independent altogether of steam, though that will soon be making rapid and extensive strides in agriculture as in other manufactures; and in commerce and social intercourse.—*Builder.*

Liming followed by Sorrel.—It is quite generally the case that a year or two after lime, or plaster in large quantities, has been sown on land it produces a heavy growth of sorrel. "The most effectual way to get rid of it," says a correspondent of the Genese Farmer, "is to sow unleached ashes at the rate of two or three bushels per acre, with the fir t grass or clover grown after the application of the lime; and when sowing plaster to mix a small proportion of unleached ashes with it."

Light for Animals.—A corresponent of the *Homestead*, in an article on fattening hogs, gives the following advice:—"One more important item of advice, and that is, locate your pen where your hogs can have the benefit of light. I don't mean merely *daylight*, but the full bright light of the sun; it will add to their cheerful contentment, as it does to the human species, and physiologists declare that, other things being equal, families who occupy apartments in the sunny side of dwellings are the most contented and happy. Although the comparison may, to sensitive nerves, appear odious, still it is beyond our pewer or province to change the established laws of nature. I never knew of a hog, or any other animal, kept under the north side of a barn or other building, where the dampness and darkeness is never penetrated by the sun's rays, and where the animal was employed as scavenger for other animals, to be sleek-looking, fat, clean or quiet. I have seen many a pen where the mud and offal was two or three feet deep, and no place of retreat left for the poor occupants upon a higher spot, excepting the bed floor, and that unfurnished with straw."

Horticultural.

Peterborough Horticultural Society.

We have been favored with a copy of the constitution and by-laws of this society, organised in April last, by its President, the Rev. V. Clementi. It must have been gratifying to all lovers of the Horticultural art, to notice the gradual formation of regularly organised societies over the country, for creating and diffusing a taste for what is most attractive and beautiful in nature, refining and elevating mans' feelings and aspirations, and at the same time largely ministering to hisphysical necessities. Gardening, in its various departments, may be regarded as a true measure of the wealth and progress, or in other words, of the civilisation, of a people. It is the accompaniment of its robust, and, perhaps, ruder sister, agriculture;—and we trust that the county of Peterborhugh will, in due time, become as distinguished in the former art as it has now been for years in the latter. The new society, if properly sustained, will, in time, bring about that desirable result. We shall be happy to record from time to time its progress, and cordially respond to the sentiments expressed in the concluding paragraphs of the report;—

"Let no one be deterred from preparing specimens for competition by the slender limits of the space at disposal for their cultivation: no garden is so small as to be unable, with care and attention, to produce the finest vegetables; and a window-sill may be the *habitat* of a plant of sufficient excellence to entitle its owner to a prize. A competitive exhibition of specimens is the only method of satisfactorily ascertaining the merits or demerits of a plant; and in no way is a lesson so easily acquired, or information so pleasantly obtained.

The cultivation of a garden is one of the pleasures of this life least subject to alloy.

Toil is indeed an essential element toward the attainment of success; but were it not so,—did each flower expand its charms in full perfection; did every kind of fruit most exquisitely gratify the taste without such toil, our enjoyment, whether of the palate or of the sight, would be materially diminished. *Labor ipse voluptas.*

Man is so constituted by nature that what he obtains without an effort is comparatively worthless in his eyes. An easy victory, whether on the battle-field, on the cricket ground, at the chess-table, in the assembly,—is unappreciated: and so with respect to the pursuit whose claims on our attention we now advocate—the harder our contest with the climate, with situation, or with soil, the more intense will be our gratification if we finally attain the prize—*laborum dulce lenimen.*"

Hamilton Horticultural Society.

The Second Exhibition of the Hamilton Horticultural Society for the season, was held in the Mechanics' Hall, on the 21st, inst. Owing to the lateness of the season the entries were not so numerous as on former occasions. The Fuchsias, Geraniums, Calceolarias, Green and Hot House plants from the gardens of W. P. MacLaren, John Young, R. Juson and John Brown, Esquires, were all very good.

The 1st. Prize for the 12 Green and Hot House plants, was taken by W. Hill, Gardener to John Brown, Esq. Varieties, Pentas carnea, Sollya heterophylla, Hoya bella, Stephanolis florabunda, Torenia Asiatica, Vinca Alba, Russelia juncea, Cupnea platycentra, Euphorbia splendens, Gardenia Florida, Erica Venticosa pullida, and Calceolaria rugosa.

The 2nd. Prize in the same class by I. Buchanan, Gardener to W. P. MacLaren, Esq. Varieties, Angelonia gardnerii, Lantania, Marquis de La Porta, Gesnera Zebrina, Gloxinia grandas, G—— Novelty, Gloxinia Charles Dickens, G—— Madam Bogere, G—— exquisita, Calceolaria rugosa, Hydrangea hortensis, Esclipeas salicifolia, and Achimenes amberosa Verschaffelt.

The 1st. Prize for the 6 Green and Hot House plants was carried off by H. Shaw, Gardener to R Juson, Esq. Varieties, Lantana aurentuii, L—— ewingii, Polygala myrtifolia, Hydrangea hortensis, Myrtus floraplena and Esclipeas salicifolia.

2nd. Prize by I. Buchanan. Varieties, Gloxinia argyronena, G—— imperialis, Vinca alba, Nerium splendens, Lantana lili liliaca and Gesnera Zebrina.

The 1st. Prize for the 4 Fuchsias by I. Buchanan. Varieties, Venus de Medici, Guiding Star, Banks, Glory, Pearl of England. 1st. Specimen, Venus de Medici.

2nd. R. Murray, Gardener to John Young, Esq. Varieties, Banks, Glory, Kossuth, Venus de Medici and Guiding Star. 2nd. Single Specimen, Banks, Glory.

1st. Prize for the Best 4 Pelargoniums was taken by I. Buchanan. Varieties, Lopens Elegans, Maria King, Butterfly, and Arnold's Virgin Queen. 2nd. Single Specimen, Mrs. Holford.

2nd. Best 4 Pelargoniums, H. Shaw. Varieties, England's Queen, Elegars, La Creamon, Confidence. Best Single Specimen, Elegans.

1st. Prize for Fancy Pelargoniums, R. Murray; 2nd. H. Shaw. Best 6 distinct Petunia I. Buchanan, also the Best 6 Verbenas in Pots; 2nd. R. Murray. Pansies by Wm. Chapman, Gardener to Isaac Buchannan, Esq. Sweet Williams and Pinks, 1st. Bruce & Murray; 2nd. D. MacNabb, Esq. Verbenas, Best 12 Trusses, I. Buchanan; 2nd. H. Shaw; Cottage Window Plants by G. Fesal, and W. Michael; Mr. Freed for Flowering, Shrubs and Native plants. Roses, Hardy, best 18, Bruce & Murray; 2nd. W. Reid, Gardener to Sir Allan N. MacNab. Best 12 Hybrid Perpetual Roses, Bruce & Murray; 2nd. W. Reid; Best 6, Bruce & Murray. Best 12 Summer Roses, W. Reid; 2nd. Bruce and Murray. Best 6 ditto, R. Murray; 2nd. Bruce & Murray.

The Early Fruits were few but very good. The Prizes for Strawberries were gained by T. Barner, Gardener to P. Grant, Esq., H. Shaw, Jas. Freed, and Jas. Wilds; the Melon Prize, by W. Chapman; and those for Apples and Pears in the best state of preservation by C. Depew, T. Lottridge and T. Smith; of Cucumbers there was a good display, the Prizes were obtained by R. Murray and W. Chapman. The entries in the Vegetable departments were few. 1st. Prize for Asparagus .I Buchanan; 2nd. H. Shaw. Lettuce and Onions by James Wilds. Potatoes by W. Hill and C. Meston. Peas by H. Shaw, and C. Meston, Gardener to T. Kerr, Esq. Rhubarb and Radishes by W. Hill, J. Freed and J. Wilds. French Beans, C. Meston. Carrots, Parsley, and Water Cresses, W. Chapman, .I Buchanan and J. Wilds. Judge Logie obtained a special Prize for Native flowers cultivated in pots. Varieties, Sarracenia purpuria, Pentstemon pubescens, Platanthera Hookeri, Cypripedium pubescens, Cypripebium acaule, Hydrophyllum virginicum. Amongst the Special Prizes and worthy of the highest commendation were two Vines from W. .P MacLaren, Esq., and a Peach tree from John Young, Esq., all were in pots and full in fruits. The Grapes were ripe and very beautiful. A Special Prize was awarded to A. Stevens for Antivrhinums and Phlox drummondii.

Bruce & Murray exhibited a fine collection of Green and Hot House plants, including some fine new Fuchsias and Geraniums, also some very fine Orchard House trees of Peaches, Nectarians and Figs.

GEO. LAING.

Hamilton, 27th June, 1841.

Antiquity of Potato Planting in Scotland.

A correspondent sends us the following interesting article from the pen of Mr. P. Mackenzie of Plean, Stirling, contributed to the *Gardener's Chronicle* :—

"In the article 'Horticulture' in the 'Edinburgh Encyclopædia,' written by the late Dr. Neil, we are told that the cultivation of potatoes in Scotland was very little understood till about the year 1740, and it was not practised in fields till about twenty years after that period. It is stated in the 'General Report' of Scotland as a well-ascertained fact that in the year 1725-6 the few potato plants then existing in gardens about Edinburgh were left in the same spot of ground from year to year as recommended by Evelyn ; a few tubers were perhaps removed for use in the autumn, and the parent plants were then well covered with litter to save them from the winter's frost. If the above statement is correct, old John Reid, gardener to Sir George Mackenzie, Rosehaugh, must have been far ahead in potato cultivation and the mode of cooking them, for in his 'Scots Gard'ner,' published in 1683, he tells us to cut potatoes in as many pieces as you please, provided there be an eye at each piece, and plant in March, five rows in the bed ; plant not deep, neither in wet nor stiff ground, and in housing spread only over a broad floor. His method of cooking them might be relished by many of the present day. He tells us to boil and peel, chop and bruise them well pour on butter, and set them on a coal, and if you please strew a little cinnamon upon them, or, for want of butter, take sweet milk. What may be called the fathers of horticultural writers in England appear to have been well learned men for the age they lived in, but it is some honour to the craft in Scotland, that it was a working gardener who wrote the first system of gardening for Scotland. Dr. Neill remarks that Scotland has been more distinguished for producing excellent practical gardeners than good publications on the art of gardening. There does not appear to have existed any Scottish system of gardening as a separate book till 'The Scots Gard'ner' was published by John Reid. The work is divided into two parts, the first treating of contriving and planting of gardens, orchards, avenues, and groves; the second of the propagation and improvement of forest and fruit trees, kitchen herbs, roots, and fruits, with a gardeners' calendar, the whole adapted to the climate of Scotland. The style is very inaccurate, but the matter evinces not only an acquaintance with previous horticultural works, but a practical knowledge of the subject. The season recommended by Reid for planting the potato, and his method of preserving it, may be kept in mind by cultivators of the present day. The parish of Kilsyth, Stirlingshire, claims the honor of having potatoes first planted in the open fields in Scotland. In the 'New Statistical Account of Scotland,' it is stated that 'It is the early and successful cultivation of the most useful Solanum Tuberosum (potato) on which the fame of this parish, in so far as botany is concerned, chiefly depends. It not only gave birth to the gentleman who first introduced the culture of potatoes into this country, but it was the scene of his earliest experiments. The gentleman referred to was Robert Graham, Esq., of Tamrather, in the East Barony. It was in the year 1739 that he commenced this work of utility. Before that period he and others had raised the potato in gardens, but there was a prejudice against raising it in fields. He planted half an acre of ground on the croft of Neilston, to the north of the town of Kilsyth, where he at that time resided as factor on the estate of Kilsyth. This excited the attention of the neighbourhood, and the practice spread extensively. Some noblemen, as well as farmers and agriculturists, came from a distance, among others the unfortunate Earl of Perth, to observe the mode of culture and the success of the experiments. Mr. Graham rented lands in the vicinity of Renfrew, Dundee, Glasgow, and Edinburgh, and for many years obtained premiums for cultivating the potato. But was Mr. Graham the first who cultivated the potato in the open fields in the parish of Kilsyth? In older books we are informed that in 1728 Thomas Prentice, a day labourer, first planted potatoes in the open fields in Kilsyth, and the success of the experiment was such that every farmer and cottager followed his example. One remarks, 'What honor does he not deserve?' He appears to have been eleven years in the field before Mr. Graham.'"

Transactions.

Abstract of Reports of Agricultural Societies received in the year 1860.

(*Continued from page* 348.)

WELLAND.

County Society.—Ninety members; amount of subscriptions, $110 ; balance from previous year, $204.61 ; deposited by township societies, $269 ; Government grant, $599.96; total receipts, $1183.57. Paid township branches, $629; paid premiums, $345. 12 ; expenses and sundries, $85.22; balance in Treasurer's hands, $124.23.

TOWNSHIP BRANCHES.

Bertie.—Forty members; subscriptions, $41 ; balance from 1858, $8.13; public grant, $54; total received, $103.13. Paid in premiums, $90.75, expenses, $8.50; balance in hand, $3.88.

Crowland.—Report defective.

Humberstone.—Forty members; subscriptions, $44; Government grant, $54; total

received, $98. Paid in premiums, $78.86; expenses, $19.14.

Extracts from Report.

As regards the Agriculture of the township, that improvement which is desirable has never been earnestly sought after, much less arrived at, nevertheless a great advance from the former state of things has been effected. Much flat land, formerly covered, Spring and Fall, with surface water, is now producing remunerative crops, having been grubbed and laid dry by surface drainage. Thorough or underdraining has not been introduced. More attention is paid to hoed crops than formerly, and, as a natural consequence, farms are becoming annually less infested with noxious weeds, and are more productive generally. More stock is kept, and of better quality. There is in this township a great variety of soils, ranging from a very hard red clay to a light blowing sand; there is, however, but little of the latter, and that near the shore of Lake Erie.

The level or flat lands of the township, which in fact comprise the largest part, are generally composed of a red clay, covered with a black vegetable mould, varying from a few inches to several feet in depth, and this description of soil in Humberstone makes excellent farming land if properly cultivated. In general, after a few years cultivation of the soil in question, the plough will bring up a portion of the subsoil, which readily pulverizes, and is well adapted to the growth of all kinds of grain, as well as roots and grasses.

We have also a considerable portion of sandy loam and gravel, which generally rests on limestone rock, the surface of which is in many places intermixed with small flat stone belonging to the same strata. The latter description of soil was cleared up and put under cultivation by the early settlers, and is by many considered the best land in the township at the present time. The arguments in its favour are, that is surest to produce an average crop, that the straw is shortest and grain heaviest. This soil is *naturally* underdrained, the rock on which it rests being generally porous. Of all the lands under cultivation in this township, there are but a few acres injured to any great extent by subterraneous moisture.

There is in this township, and still in a state of nature, a considerable portion of marsh land, consisting of three distinct parcels; namely, on the west side, about 3000 acres, known as part of the Great Cranberry Marsh; in the north-easterly part of the township, a tract of about 700 acres, called marsh, but which might more properly be denominated prairie land; and in the easterly part, about 3000 acres.

From the facts stated, it may be readily inferred, that the value of land in this township, per acre, must vary materially. We estimate farming lands in this township to range from $20 to $50, per acre, according to soil, improvement, &c.; and as an instance, we quote 50 acres that were sold this winter, 38 under cultivation, and 12 in a state of nature—neither orchards nor buildings of any description on the lot, for which $1000 in cash was paid. The land in question lies about two miles from Port Colborne, and the soil is about an average of the farming lands in the township.

The wages of labor, as paid by farmers, varies very much, as there are many immigrants among us, the most of whom are not as profitable farm laborers as those that are naturalized. We may quote wages at from $75 to $120 per year. And here we beg to suggest, that it is the prevalent opinion of our Committee, that if the Board of Agriculture would, through their journal, urge upon carmers the propriety of giving a worthy servant, when taking his leave, a letter of recommendation to their brother farmers, striving to give the bearer's true character as a farm labourer, great good to the worthy labourers and farmers would be the result. Carpenters generally get $1 per day, and board, other mechanics about the same. The above mentioned low wages have only prevailed since the existence of the present depressed state of financial affairs.

As regards crops in this township, *Wheat* has been materially injured for the last three years by the midge. It is the opinion of your Committee, that the harvest of 1858 did not yield more than *two bushels* to the acre; but the harvest of 1859, was somewhat better—average yield about *eight bushels*.

The common grasses cultivated are the red and white clovers and timothy. Of the red clover there are two kinds, a small and early variety, which produces two crops in a season—the second crop being generally cut for seed, or used for pasture; however, a second crop of hay is sometimes cut, yielding two tons to the acre, if the season is favour-

able and the land well cultivated. The other grows larger, blossoms later, and ripens about the same time as timothy. The seed must be obtained from the first crop, as the after growth never blossoms.

Hitherto, little has been done in the cultivation of root crops, except potatoes; an improvement, however, is going on in this respect. In 1859, a number of our farmers cultivated a small piece of mangel wurzel, ruta baga, carrots, or turnips, and, so far as we are aware, all who gave root culture a trial are satisfied that it can be made profitable. Previous to 1859, but few attempted the culture of roots to any extent, or advocated its feasibility. The increased cultivation of Indian corn and potatoes, particularly the former, which a few years since was grown only to a very limited extent, your Committee regard as one of the most marked advances in the agriculture of the township.

Farming Implements.—In reference to agricultural utensils, that advance which is desirable has not been made; but a number of valuable implements have recently been introduced among us, such as mowing machines, reaping machines, &c. Our ploughs are very good, consisting principally of those manufactured by Messrs. Hann & Dobbie, of Humberstone, and Mr. Morley, of Thorold; but we consider the harrows in use among us of very inferior quality, with the exception of some few that have been introduced recently, and those are mostly what is called the Scotch harrows.

Horses.—A great general improvement has taken place in horses, neat cattle, sheep and swine. The class of horses more generally raised, are those best adapted to agricultural purposes; however, some fine specimens of heavy draught horses have been grown among us; also, quite a respectable number of good coach horses; the latter class are generally bred from stallions possessing, in a considerable degree, the Cleveland bay blood. A number of fine horses grown in this township have been sold within the last year, at remunerating prices, to speculators who exported them to the Southern States.

Cattle.—As regards our neat cattle, improvement has been mostly in the line of grades, by breeding from native or grade *cows*, and pure bred *Durham bulls*, with a sprinkling of *Devon* and *Ayrshire* grades; nevertheless, some of our more enterprising farmers have effected much in the right direction, by procuring some splendid thoroughbred Durham cows, and raising young stock, which compare favourably with herds of the most noted breeders in our own and the adjoining counties. The Durhams and their grades are deemed the most profitable breed of cattle by our best farmers, all things considered.

Sheep.—In sheep husbandry, much improvement has taken place. The thoroughbred sheep introduced among us, so far as your Committee are aware, have been Leicesters, and South Downs; and by far the larger number of the sheep in the township consists of grades bred from native or grade ewes and Leicester or South Down Tups—the quantity of each being about equal. There are a few flocks of pure breeds, of both the above-mentioned classes, and each class has its advocates as well as its good qualities.

Swine.—The Berkshire blood prevails in our swine; of late, however, there have been some fine specimens of the Suffolk introduced among us, which are much admired, and in the opinion of your Committee will do much to improve the stock—a cross between them and the larger breeds has thus far turned out quite satisfactory.

Pomology.—The extreme cold winter of 1856 proved very destructive to our fruit trees generally. The greater part of the peach trees and plum trees died under the ordeal, and such as were not killed were so much injured that they have produced no fruit of any consequence since. Apple and pear trees were injured to such an extent that numbers have died in consequence every year since. In addition to all this, the apple trees have been much injured, and many orchards literally destroyed by an insect called the *Borer*, a worm that enters the trunk of the tree near the ground, and commits more or less injury, sometimes girding the tree and producing death the first year; but whether so immediately fatal or not, every orchard that becomes infested with those worms appears doomed to destruction in a very few years, unless, by the watchful care of an intelligent person, the pests are extirpated; and your Committee know no other way of doing it, than by frequently examining every tree, and, where depredations are committed, following the intruder, either by cutting away the bark with a knife, or inserting a wire in

the orifice and destroying it. If the remedy is strictly adhered to, for one year, the orchard will be nearly or quite rid of a pest that, if let alone three years, will rid the owner of his orchard, and breed enough of these destructive insects to be a serious injury to all the orchards in the neighborhood. Aside from the above drawbacks, there are a few fine orchards in the township which are annually producing large crops of extra fruit, probably equal to any in Canada. Those orchards are principally protected on the south-west by a belt of evergreen trees, a rise of ground, or some other natural or artificial protection from that quarter. Where good orchards are properly attended to, they prove very profitable, and under the above-mentioned circumstances, the crop of fruit was good in 1859, notwithstanding the heavy June frosts.

Horticulture.—There is not so much attention paid to this branch of husbandry as is desirable, though there are many good kitchen gardens which contribute largely towards the support of the owners' tables, as well as the comfortable appearance of their domiciles. A few of our citizens have entered into the cultivation of flower gardens and shrubbery, to such an extent as to make their homes appear most attractive; and your Committee earnestly hope and verily believe that their worthy example will soon be followed by many.

The Population.—The yeomanry of this township consists principally of Pennsylvania Dutch, and their descendants, interspersed with English, Irish, Scotch, Germans, Americans, and a few from almost every civilized nation on the face of the globe. The first mentioned class, although not the most enterprising people in the world, rank high in the scale of industry and morality.

Pelham.—Sixty-nine members; subscriptions, $69.75; balance from previous account, $5.55; Government grant, $74.25; total received, $149.55. Paid in premiums, $107.62; expenses, $29.69; balance in hand $12.24.

Stamford.—Fifty-four members; subscriptions, $58; balance from previous year, $86.29; public grant, $101.25; total received, $245.54. Paid in premiums, $193.24; expenses, $14.04; balance in hands of Treasurer, $38.26.

Thorold.—Subscriptions, $61; balance from previous year, $25.79; Government grant, $76.50; total received, $163.29. Paid in premiums, $128 46; expenses, $15.54; balance in hand, $19.29.

Willoughby.—Report imperfect.

NORTH WELLINGTON.

County Society.—One hundred and thirty-eight members; subscriptions, $156.50; balance from 1858, $83.27; deposited by Township Societies, $321; received from sale of prize grain, $22.27; Government grant, $479.98; sundries, $2.18; total received, $1065.22. Paid Township Societies, $599.86; premiums, $306.50; expenses, $115.93; balance in Treasurer's hands, $42.93.

TOWNSHIP BRANCHES.

Maryborough.—Forty-six members; amount of subscriptions, $48; balance from previous account, $26.90; share of public grant, $45.13; total received, $120.03. Paid in premiums, $89.87; expenses, $17.89; balance in hand, $12.27.

Minto.—Fifty-one members; amount of subscriptions, $58; share of grant, $52.03; receipts at show, $13.50; total received, $123.53. Paid in premiums, $73.75; expenses, $18.05; balance in hand, $31.73.

Nichol.—Eighty-seven members; subscriptions, $87; share of grant, $78.90; receipts at show, $16; total received, $181.90. Paid in premiums, $135.50; expenses and sundries, $47.95; balance due Treasurer, $1.55.

Peel.—Fifty-one members; amount of subscriptions, $51; balance from previous year $72.12; share of grant, $37.34; special subscriptions, entries, and sundries, $24.50; total received, $184.96. Paid in premiums, $103.75; expenses, $36.64; balance in hand, $44.57.

Pilkington.—Eighty-four members; amount of subscriptions, $91.50; Government grant, $75.42; total received $166.92. Paid County Society, $10; preminms, $117.50; expenses, $39.42.

SOUTH WELLINGTON.

County Society.—Two hundred and fifty-four members; amount of subscriptions, $297.50; balance from previous year, $33.55; deposited by Township Societies, $638; Government grant, $479.98; receipts at show, $5.25; total, $1454.28. Paid Township Societies, $918.80; premiums and expenses, $484.71; balance in Treasurer's hands, $50.77.

Extracts from Report.

The well directed efforts in this county for the improvement of every description of stock, and the desire evinced to secure the services of the very best male animals, gives incontestable evidence of the conviction, that it is much more profitable to raise, and feed, a good animal than a bad one; and when considered as an investment, the procuring of the best animals to breed from, must ever claim the earnest attention of all intelligent farmers.

The past summer was not the most congenial for the growth of the turnip crop, the excessive heavy rains in many places did serious injury to the young plants, and in many fields it was found necessary to plant a second time, which rendered the plants puny, and consequently not so productive as those in more favored localities. The directors are of opinion that the average yield will not exceed four hundred bushels to the acre.

In connection with the subject of feeding stock, the directors are of opinion that as our pastures generally fail of yielding a full supply of feed about the months of July and August, thereby causing great inconvenience and loss, they are anxious to call your attention to the advantages which would accrue from the raising of some kind of green crop, available about that time, such as Rape or Vetches, or some kind of Millet. If the Hungarian Grass, which is at present comparatively but little known amongst us, would produce a supply to meet the requisite demand, it must be very obvious that a more extensive knowledge of its properties and productiveness is most desirable. They are also aware, that to raise these crops successfully, in addition to the usual breadth of root crops, a liberal supply of manure would be required, and, should the limited resources of the barnyard be insufficient, they are of opinion that bone dust would be the most convenient application.

With regard to the crops of the past year, the Directors would remark, that although the Fall Wheat in several sections of the county suffered severely from summer frosts, and in some fields to the destruction of the entire crop, yet, notwithstanding, a considerable breadth escaped to a great extent, so that in estimating the entire yield, they are of opinion that it would be about 15 or 20 per cent below an average crop. Spring wheat was fortunately more extensively planted than usual, and the sample is generally good, some very fine, both in color and quality, and at present prices will no doubt prove remunerative to the growers.

It is pleasing to observe, at our exhibitions, the improvements that have taken place in the cattle since the Durhams or Short-horns were first brought into this county. Although they were not generally appreciated at first, who can now put a proper estimate on the boon conferred by those who have introduced them into this neighborhood? They have long since became the favorite breed in this section of the province. The community is greatly indebted to F. W. Stone, Esq., of Guelph, he having on several occasions imported from the most eminent breeders in England. An infusion of fresh blood has thereby been introduced, and the high character which this county has obtained for superior stock is still fully maintained, with every probability of its continuance. This breed is distinguished for their early maturity and propensity to lay on flesh, which render them eminenty adapted for feeding purposes. Of this we had ample proof at our Fat-Cattle Show in December last; two three year old well bred grade steers were exhibited, and afterwards sold one for one hundred dollars, and the other for one hundred and thirty. The latter was awarded the prize for a sweepstakes as the best fatted beast, competing with a pair of oxen afterwards sold for two hundred and fifty dollars.

The Leicester breed of sheep have prevailed in this county for many years, but since Mr. Stone imported and introduced the Cotswolds, many of the farmers prefer a cross with that breed, and in their opinion this has materially improved their flocks, producing a heavier fleece and heavier carcase. We have much pleasure in being able to state that Mr. Stone has again added to his valuable stock by the importation of about twenty Ewes and some Tups of the Cotswold breed, from the most celebrated flocks in Britain. An infusion of fresh blood cannot fail to exercise a beneficial influence, and as this breed of sheep appear to be well adapted for this climate, and is every year more appreciated, we trust Mr. Stone will be amply repaid for his untiring enterprise.

The monthly Fairs for the sale of cattle in in the town of Guelph, have proved very beneficial to the farmers of this county, and buyers for the Toronto, Montreal, as also the New York and Boston markets are constant visitors thereat.

TOWNSHIP BRANCHES.

ERAMOSA.—One hundred and one members; subscriptions, $130; Government grant, $53.

55; balance from previous year, $34; tota received, $217.55. Pa d in premiums, $158. 50; expenses, &c, $15.30; balance in hand $43.75.

Extracts from Report.

The soil of this township is somewhat varied, the base or southeasterly section is better adapted to the growth of Fall wheat than the middle section. The soil of the lower section of the township is a rich gravelly loam, mixed with limestone, resting on a dry gravelly subsoil. The soil of the upper section of the township is a deep stiff loam, requiring much artificial drainage. Some drainage has already been accomplished, but much more requires to be done to render the fall wheat plant safe from heaving with the spring frosts, and to make the soil sufficiently dry for early cultivation of the spring crops.

The average value of farms per acre, with the buildings thereon, from actual sales during the past year, is twenty-six dollars. It is but just however to state, that the few sales that have been effected were forced sales; the owners of good farms with suitable buildings for farming operations do not feel disposed to take that sum per acre.

The system of cultivating for the fall wheat crop, is principally by summer-fallow, the fields selected are clover and timothy sward mown one or two years, and pastured one or more years. The sod is broken up to the depth of 6½ or 7 inches in the spring of the year, and generally receives three ploughings with the seed furrow, with intermediate harrowings and cultivating. Some farmers, however, adopt the system of ploughing the first furrow somewhat later on even surfaces, and then harrow and cultivate to keep down the grass and kill the weeds that spring up in the summer, until the last week in August, or the first of September; they then plough the seed furrow, and harrow in the seed, and if the season and soil are suitable they succeed very well by this system of cultivation.

The Fall wheat was much injured by the severe frost in the month of June, last summer. While some fields were only slightly injured, the bulk was very much so, so that the average returns must necessarily be put very low, not exceeding 10 bushels to the acre. The township on the whole is well adapted to the gorwth of Spring wheat, but more especially the middle section; this crop is usually grown on potato and turnip land, and clean manured pea stubbles, and was more productive and of much better quality than it was in the year 1858, although the variety known as the Ohio Club Wheat suffered a good deal from rust. A considerable quantity of the Fife Wheat was sown, and has so far escaped the rust, but the greater proportion sown was the Ohio Club variety. The actual return of the Spring Wheat crops, would not on the averrge exceed 20 bushels per acre.

The early Fall wheat crop was injured by June frost, and the late by both rust and frost, and the Ohio Club variety of spring wheat was injured by rust. The wheat crop was not injured the past year by any insect, but on some previous years the crops suffered to a limited extent by insect, and the Spring wheat on some lands has been slightly injured by wire worm.

The soil is well adapted to the growth of peas, large quantities are grown by the farmers in proportion to other grain. They are generally grown on wheat or oat stubble, ploughed in the fall and well cultivated in the spring at the time of sowing; the average return per acre was 30 bushels. The pea crop was free from the ravages of the pea bug. The soil is also suitable to the growth of barley, but the extra expense and trouble of harvesting and threshing deter many from sowing it, more however was sown than in previous years. The two rowed barley is preferred if the land is in a proper state of tillage; if not, then the six rowed is preferred. The average returns will be 35 bushels per acre. The land best adapted for the growth of barley is that after potatos and turnips, but the farmers consider that the wheat crop on these lands is more remunerative, consequently a rich fall wheat stubble is generally taken, and when well pulverised, sown in May. The soil of this township is also very suitable to the growth of oats and a large breadth is sown with this crop. The land is generally ploughed in the fall of the year, and well cultivated before sowing in the spring, the return from the oat crop however is not so great as it was for many years after the early settlement of the township. The principal cause of the falling off is most likely the over cropping of the land; the average return was not more than 50 bushels per acre. The oat crop was not injured by insect or blight.

The current rate of wages for labourers this year was from $9 to $11 per month, and of mechanics $1¼ per day.

The soil is admirably adapted to the growth of roots, viz., potatoes, turnips, mangel wurzel, carrots, cabbages &c. Potatos are not cultivated on a large scale in the township, farmers raising from one to three acres each. The potato crop was much better last year than for some years previous, and the quality of the potato very good. The actual return however was not great, not exceeding on the average more than 200 bushels per acre. They were not injured by the rot. The turnip crop was more extensively cultivated than formerly, and succeeds well with good cultivation; the Swedish Turnip greatly predominates and is more extensively used for the fattening of cattle, and for feeding milch cows and young stock through the winter months, than any other root. The average return of this valuable root was 600 bushels per acre, and might be made much larger by superior cultivation. Some crops suffered a good deal from the Turnip Fly; they did not suffer materially from any other cause. Mangel Wurzel is only cultivated to a very limited extent, but succeeds very well, and great weight per acre might be raised by good cultivation. The small quantities that were raised were grown near the homesteads and taken to the stables and fed to the milch cows in the early fall when the pastures began to fail. The crop did not suffer from any cause. Field carrots succeed very well with good cultivation, but they are only raised in small quantities, for the purpose of feeding horses, and boiling for fattening hogs. The return of this crop was 600 bushel per acre.

The breed of cattle that prevail in this township are grade Durhams. The improvements have been slow but steady; they have been effected by putting thoroughbred Bulls to the native cows and then other thoroughbread bulls to their progeny, from the year 1836 to the present time. The result has been the produce of some very good cattle. There are but very few thoroughbred cows and heifers in the township, so that we have little or no experience of the profits of raising thoroughbred cattle for sale. The grade cows are used for dairy purposes, mostly for making butter; there is but little cheese made for the market. The calves to be raised are fed with new milk for some time after they are dropt, say from one to three months, then skimmed milk with the addition of a pint of peas and oatmeal mixed with it, to make up the deficiency for the loss of the new milk. The peas and oats are mixed in the proportion of one bushel of oats to two bushels of peas, and ground at the mill. Calves can with this system of feeding be kept in good growing order during summer and early fall months at a very trifling cost, thereby saving the extra cost of getting them up in condition during the winter, or the painful necessity of turning them out in the spring nothing but skin and bone, and partially ruined for life. The cows and young cattle are, during the winter months and until the time of pasture, fed with turnips and chaff, and the best of the straw. The young cattle and the cows that are not giving milk will, if they have comfortable shelter, keep in good condition with this treatment without hay, if they have a sufficient quantity of roots, not less than a bushel to a bushel and a half per day according to the size of the animal. The cows that are giving milk, and calves, require the addition of a little hay to keep them in proper condition.

Greater numbers of cattle are fattened for the shambles than formerly, as a natural consequence arising from the greater breadth of the root crop. The actual returns from the feeding of cattle (independent of the extra quality of the manure, which is no small item to the farmer,) depend on the state of the markets, and the quality of the cattle, but will be from 50 to 100 per cent, this of course includes the cost of feeding. It is, however, to be lamented that there are too many farmers in the township who do not appreciate good stock, but leave their cattle to feed at the straw stack; and judging of the profits of breeding and feeding stock from this system, we should arrive at no very favorable conclusion. The advantages of raising good stock and properly taking care of them, require to be better known to be appreciated.

The sheep patronised in this township are of the Leicester breed, and they thrive very well, the township being well watered, and the soil well adapted to the pasturage of both sheep and cattle. Sheep are a paying stock if good animals are raised and properly cared for. Raising wool for the market pays very well, as a fair flock of sheep will average 5 pounds of wool to the fleece, wether sheep are not kept here over one year old. The feeding during winter is, pea straw with a very little hay, and a fair quantity of turnips until lambing time, then hay and turnips.

The feeding of the aged sheep and shear-

ling wethers, and wether lambs, pays very well. If fed early and fat enough for the Christmas market, and got to weigh 30 lbs. or 35 lbs. per quarter, they are worth from ten to fifteen dollars each. If not fed so early, but brought into the market in the month of March, weighing 26 or 27 pounds per quarter, they are worth from nine to ten dollars each, and good fair wether lambs seven dollars each.

Hogs are kept in limited numbers by the farmers for their own consumption, and some for the market. The grain used for feeding is peas. The first pure breed that was brought into the township was the Yorkshire; these crossed with the Berkshire and Suffolk breeds constitute the present hogs of the farmer. The profits of feeding pork depend on comparative market value of pork and peas; some farmers are of opinion that taking a series of years fattening pork for the market is not profitable. But with a good breed of hogs and a judicious system of feeding, taking into account the extra quality of the manure from the hog-pen, it will pay.

No farmer has commenced the thorough draining system, but a good deal of the wetter portions of the land have been drained more or less efficiently. The main drains are dug 4 feet deep, and the other drains leading into the main from 3 to 3½ feet, and laid with stone in the the bottom, this being the best material at hand for the purpose. The effect of the draining that has been accomplished is highly beneficial. The greatest difficulty that we have to contend with in draining is when we come in contact with quicksand, which is quite common on low wet land,—Tile would no doubt obviate the difficulty were they at hand. The stone drains, if they are not particularly well laid are liable to choke in these places.

Quite an improvement has been effected in our ploughs by the importation of a goodly number from the factory of J. West, Rose Mill Station, near Dundee; also fourteen manufactured by Sellars & Son of Huntley, Aberdeen, Scotland. There have been a few made in the township from the model of these ploughs, supposed to be somewhat improved. There are others made in the township, after McSherry's pattern, St. Davids, C. W., and some from the shop of G. Morley, Thorold. The cultivator has been almost an indispensible article in farm culture, there are several made by different parties, but those made by Mr. Wm. Crowe, Guelph, are the best. A good number of Mowing and Reaping Machines are in use in the township.

The progress making in raising fruit orchards has been rather slow, and so far rather unsuccessful, the fruit being all destroyed last summer by the frost in June. A good many trees have been killed from different causes; one cause the extreme severity of the winter frost during past winters; another, the extremes of temperature in the spring; very warm weather causing the tree to start and the sap to flow freely, then cold north-westerly winds and frosts succeeding check the sap and crack the bark of the tree. Another cause and perhaps not the least is the over cropping of the orchard lands.

The greatest improvement that could be made in our farm management, would be the thorough draining of all the wet portions of the land; cultivating a greater breadth of land for roots and green crops, converting a much greater portion of the coarser grains raised on the farm, with the green crop, into beef, mutton, and pork, for the market, as well as keeping the store stock of the farm in proper condition, thereby greatly increasing the quantity as well as the quality of the manure heap, and by judiciously applying this extra quality and quantity of the manure to the soil. By attention to these points the farmer would be better enabled to fully develope the capabilities of his fields.

Erin.—Eighty eight members; subscriptions, $125.50; balance from 1858, $32.07; receipts from other sources, $31.50; total received, $245.77. Paid in premiums, $171.50; expenses, $21.09; balance in Treasurer's hands, $53.18.

Extracts from Report.

We suggest to future Directors that they make it, if not compulsory, highly desirable that everything shown be accompanied by a brief account of the soil and seed, when ploughed, and how manured, and the yield, which information should form a part of, and belong to the society, and would form a fund of valuable information to all.

The Township of Erin is making great progress in the improvement of stock.

The fall wheat was badly injured by frost last year; some fields which escaped averaged from 30 to 35 bushels per acre; those injured averaged 15 bushels per acre. The spring wheat crop was good, averaging from 20 to 25 bushels per acre. Oats and peas were average crops, oats 45, peas 30 bshls. per acre. Hay was badly injured by the frost, and not more than half a crop. Roots in general were good. Turnips 500 bshls. potatos 100 bushels per acre. The general way of raising potatos and turnips is in drills, some preferring the raised drills.

There is a rapid improvement in Agricultural Implements, some very good iron ploughs are made in the township, also cultivators, Horse Hoes, and Turnip Drills.

The average wages of Mechanics is $1 per day, laborers 50 cents. per day.

The Township of Erin is of a sandy loam, generally with clay and limestone bottom, and is more adapted to the raising of wheat, peas and roots than other grain.

The average value of land per acre is from $20 to $40 for good farming land. The general system of farming is that of summer fallowing and manuring for fall wheat; spring wheat is sown on pea and turnip land; seeding down is general with spring wheat; peas are generally grown on sward ploughed in the spring.

Guelph.—Two hundred and twelve members; subscriptions, $262; Government grant, $108; total receipts, $370. Paid balance due Treasurer, $21.20; premiums, $288.50; expenses, $59.50; balance in hand, 80c.

Extracts from Report.

The remunerative prices now obtained for all kinds of farm produce, combined with the general good crops of the past season, have contributed largely to the prosperity of all classes of the community.

In referring to the probable yield of the crops in this township for the past year, fall wheat may be put down at not more than half a crop, not more than 12 or 15 bushels to the acre. Spring Wheat, which fortunately, was more extensively cultivated may be put down at about 30 bushels to the acre, chiefly of the Fife sort, which is now a general favorite amongst the farmers of this township. Peas, which were grown very extensively, chiefly for feeding purposes, may be put down at over 30 bushels per acre. Oats at from 40 to 50 bushels, and barley, which is not grown to any considerable extent, at between 30 and 40 bushels per acre. Hay has been rather a poor crop; but from the fact that a very large breadth of turnips was sown last year, the short crop of hay will be but little felt amongst the farmers generally. It is very gratifying to observe that, the crops sustained little or no injury from the wheat fly or any other insect.

Roots for the purpose of stall feeding cattle, may be now considered as one of the staple productions of the Township of Guelph, possessing as it does, a soil well adapted to the cultivation of all kinds of roots, which, with ordinary care and management, will produce, from 5 to 600 bshls. of turnips to the acre. The greatest drawback a few years ago in connexion with the turnip crop, was the labor and expense in cultivating and storing them, but such objections will now scarcely be made by any farmer of note, from the introduction of a better system of drill cultivation, with improved drills and scarifiers, and the spacious and convenient root houses, found on almost every farmer's premises, capable in many instances of holding from 2,000 to 3,000 bushels.

The establishment of Monthly Cattle Fairs in the Town of Guelph, has been of immense benefit, not only to the farmers of this township, but of the whole county, bringing, as they do, buyers from every part of the province and neighboring States. It is admitted by all who have had an opportunity of witnessing our Fairs and Annual Exhibitions, that we possess a breed of cattle for fattening qualities inferior to none, but superior to most townships in the province.

The favourite breed of cattle in the township is the Durham or Short Horn, which dates its introduction from the splendid breed of animals imported into this part of the country, by Rowland Wingfield, Esq., and which has been still further improved by the more recent importations of F. W. Stone, Esq., to whom the farmers of the township are so much indebted for the opportunities afforded by him for the improvement of their stock, and for the enterprising spirit he has shown in introducing such superior stock into this neighborhood. The sheep are generally of the Leicester breed, which has been much improved

by crossing with the Cotswold, imported also by F. W. Stone, Esq., giving an increase of both wool and mutton, and producing a more hardy and healthy animal, than if bred from the pure Leicester.

The raising of hogs is still carried on to a considerable extent by many farmers in the township, and the high prices obtained for some years back have rendered it highly remunerative. A large proportion of the swine was for a great number of years principally of the large White or Yorkshire breed, which attained to a large size and weight, but at a considerable expense of feed. This description of stock has been much improved lately, by crossing with the smaller breeds, such as the Suffolk and Berkshire, producing a greater amount of weight in proportion to the food consumed. The pork fed in the township has always been held in high estimation in the Dundas and Hamilton markets, and is always sure to command an extra price for its superior quality.

In regard to the general system of farming now carried on in the township, considerable differences exist, even amongst farmers in the same neighborhood; but the former almost universal system of naked fallows for the wheat crop is now almost abandoned, except in cases where it is absolutely required to get the lands clear from stumps and stones. Ploughing a clover sod in the spring and sowing with peas, followed either by fall or spring wheat with a good coat of barn-yard manure, succeeded by oats or spring grain, then roots, and afterwards sowing down in grass with either spring wheat or barley, is a system which is highly recommended and carried out by a large number of the leading farmers in this township.

Under-draining is carried out to some extent in the township, and as drain tiles must be brought from a distance, at much expense, the drains are generally laid with stone or cedar timber, which answer very well.

Puslinch.—One hundred and forty-three members; subscriptions, $157 25c.; balance from 1858, $41 22c.; public grant, $63; total received, $261 47c. Paid in premiums at show and ploughing match, $182 50c.; expenses, $52 38c.; balance in hand, $26 59c.

NORTH WENTWORTH.

County Society.—One hundred and thirty-five members; amount of subscriptions, $135; balance from 1858, $39.48; deposited by townships branches, $375.50; grants from Municipal Council, $175; government grant, $479.98; received from joint exhibition, $43.68; total receipts, $1248.64. Paid Township Branches, $663.49; paid on account of exhibition held in conjunction with the South Riding Society, $520.48; expenses, $41; balance in Treasurer's hands, $23.67.

TOWNSHIP BRANCHES.

Beverly.—One hundred and sixteen members; subscriptions, $117.50; Government grant, $76.70; grant from Township Council, $20; total received, $214.20. Paid balance from previous year, $8.55; premiums $142.62; expenses, $60.76; balance in hand, $2.27.

East Flamboro.—Eighty-seven members; amount of subscriptions, $130.50; grant from Municipal Council, $40; share of public grant, $116.19; total received $286.19. Paid in premiums, $228; expenses, $55.04; balance in Treasurer's hands, $3.15.

West Flamboro.—Ninety members; amount of subscriptions and donations, $134; public grant, $95.10. Paid in premiums, $179.75; expenses, $41.89; balance in hands of Treasurer, $6.96.

SOUTH WENTWORTH.

County Society.—One hundred and four members; amount of subscriptions, $108; balance from previous year, $39.48; deposited by Township Societies, $410; grants from Municipal Councils, $175; Government grant, $479.98; total received, $1212.46. Paid Township Branches, $697.98; paid on account of exhibition held in conjunction with North Riding Society, $514.48. North and south Wentworth Societies organized a joint board for the purpose of holding an exhibition in common. The Treasurer of this joint committee received from the funds of the two societies, $1056.95; receipts at show, $174.37; total $1231.32. Paid in premiums, $870.75; expenses, &c., $309.22; balance remaining in hand, $51.35.

Extracts from Report.

South Wentworth is composed of five Townships—viz., Ancaster, Barton, Binbrook, Glanford, and Saltfleet, and occupies a surface of 136,800 acres of land, which is, with very few exceptions, in the hands of actual

settlers. A large portion of the riding fronts on Burlington Bay and Lake Ontario.

The climate is decidedly healthy.

The continuation of the Queenston Heights, stretching across Saltfleet, Barton, and Ancaster, causes considerable broken land in these townships. The land lying below the Heights—or what is commonly called "The Mountain"—is generally flat. Soil: sand, sand loam, clay, and clay-loam. Above the Mountain the land is neither flat nor hilly, but gently and beautifully rolling. The soil, as below the Mountain, is irregularly distributed; loam and clay may be found in every township. On the whole, the soil is excellent, producing, with good culture, heavy crops of grain of every description, grass, and roots.

With very few exceptions there seems to be no regular system of culture. The six-course husbandry—thus designated: 1. drilled crops of all kinds; 2. spring wheat, or barley, or oats; 3. clover meadow; 4. pasture; 5. peas; 6. winter wheat—has been followed to some extent, but on the old cleared farms the five-course husbandry has become more popular. Under the five-course husbandry, one-fifth of the farm is each year occupied as hereunder: — 1. drilled crops, turnips, potatoes, and Indian-corn; 2. barley; 3. clover meadow; 4. pasture; 5. wheat (varied occasionally, 4. wheat; 5. oats), though it is not approved to sow two grain crops in succession. This beautiful system keeps the land always in prime condition, and no crop being too often repeated, the properties of the soil necessary for its growth are not exhausted.

Under draining is but little practised yet, but where it has been done the result has been highly satisfactory.

The average return of crops for 1859 were as follows: —

Fall Wheat,	15	bushels per acre.
Spring Wheat,	25	"
Barley,	30	"
Peas,	26	"
Oats,	42	"
Indian Corn,	60	bushels of ears per acre; much injured by frost.
Potatoes,	150	bushels per acre; rot to the extent of one-third.
Turnips,	21	tons per acre.
Mangel Wuzel,	18	"
Carrots,	25	"
Clover Hay,	1	"
Timothy Hay,	1	"

The fall wheat throughout the riding was considerably injured, the midge having done more damage than in 1858. The ever-to-be-remembered frost of June contributed its share of destruction. Some fields were entirely destroyed by the latter. The rust also contributed its share of mischief. Upon the whole the winter wheat was injured to the extent of one-half.

The hay crop was also much injured by the June frost, which reduced the yield considerably; many old meadows not being worth cutting. Owing to the very fine growing season, however, the afterswath was very luxuriant, producing a good crop of clover seed.

Average value of farm land,—$55 per acre.

Manufactures.—The Cold-Spring Cloth Factory, owned by Messrs. H. & A. Egleston, situated on the Cold-Spring Creek, in the township of Ancaster, manufactures largely atinett, tweeds, cloth, and flannel.

Messrs. Theursson & Co., and Messrs. McDonald & Gurnett, of Ancaster, are justly celebrated for their threshers and separators, of which 50 to 100 are manufactured in each shop yearly.

Messrs H. & A. Egleston, of Ancaster village, iron-founders, and makers of cloth manufacturing machinery, ploughs, stoves, &c.

Mr. J. G. Crane, Ancaster, manufactures knit shirts, drawers, and hosiery, comparing favourably with imported goods of that class.

Mr. M. Wiard also manufactures trench ploughs, gaug ploughs, and seed drills of a superior description.

Adam Condie, of Bartonville, manufactures iron and wood ploughs.

Sawed lumber is manufactured to some extent. We have in the county a goodly supply of grist and flouring mills.

TOWNSHIP BRANCHES.

Ancaster.—One hundred and two members; amount of subscriptions, $116; balance from previous year, $26 28; grant from Township Council, $40; share of public grant, $98 34; entries and donation, $21; total received, $301 62. Paid in premiums, $207 25; expenses, $56 68; balance in hand, $37 69.

Barton, Binbrook, Glanford and Saltfleet.—One hundred and eleven members; subscriptions, $132 50; balance from previous year, $202 96; grant from Township Council, $40, Government grant, 189 64; total received, $565 10. Paid in premiums, $351; expenses, $37 36; balance in hand, $176 74.

Editorial Notices &c.

TO AGENTS—REDUCTION IN PRICE.

Having still a considerable supply of back numbers on hand, we offer them to agents or officers of Societies at the following reduced rate: Every agent or officer of any Agricultural Society sending us two dollars, the price of four copies of the *Agriculturist*, for a year, will receive therefor five copies, from the commencement of the year, being a bonus of twenty-five per cent., which will afford them a better remuneration for their exertions in obtaining subscriptions than our ordinary terms. The copies will be mailed to the individual subscribers, or otherwise, according to instructions. We also take subscriptions for the half year at 25 cents per copy, 11 copies for $2 50, &c., in accordance with our usual rates; but we would strongly recommend any new subscriber to take all the back numbers, from the 1st January last, and they will then at the end of the year, be in possession of a large and handsome volume of 768 pages, containing a mass of information on every agricultural topic applicable to all seasons of the year, and which will be just as valuable for reference on future occasions as at the present time.

LOVELL'S GENERAL GEOGRAPHY.

A good general geography has long been required in our Schools, one which would afford to the youth of Canada adequate information in regard to the extent, configuration and distinguishing features of the country in which they live, together with such an amount of general information as could be conveniently placed in their hands in regard to other countries. The work before us supplies the desiratum. While Canada and the other British Provinces in North America have just that prominence given to them which is highly desirable and important in a work specially intended for the schools of these provinces, and which was to be found in no previous publication, other countries have likewise full justice done them in this respect. The work is a Geography and Atlas combined; containing over 100 large pages, abounding with maps and pictorial illustrations The engraving, printing, paper, and the whole execution of the work are excellent. The maps and letter press are printed with great clearness and distinctness. We consider this Geography far superior, especially for Canadian schools, in many respects, to any similar work heretofore available to the public in this country, and we are surprised to see it sold at so low a price as the publishers have placed it, only one dollar. We hope to see this work become the standard class book, in its department, in our schools. Printed and published by John Lovell, Montreal; and sold by R. & A. Miller, Toronto.

SECRETARIES OF AGRICULTURAL SOCIETIRS.

This and following numbers of the *Agriculturist* will be sent to the Secretaries of Societies for the current year, so far as we are in possession of their names and address, having up to this date made use of the list of officers for last year. Such gentlemen, therefore, who may now receive the *Agriculturist* for the first time, will please accept this explanation as the reason of its being sent to them; such copies are sent gratuitously, in order that societies may be in possession of official returns, &c., of the Board. Secretaries of last year who have not been reappointed this year will also please understand from this explanation, the reason of the paper being discontinued.

SALE BY AUCTION,

A VALUABLE MILL PRIVILEGE IN YORKVILLE, only a few yards out of the city limits of Toronto, will be on sale by Messrs. Wakefield & Coate, at their Rooms, King Street East, on

The premises consist of a Brick Building, in which there is some machinery, formerly used as a brewery and distillery, with three acres, two roods and ten perches, more or less, of land, The site is admirably adapted for the above business, or general manufacturing purposes to which water-power is applied. Persons desirous of establishing in Toronto the manufacture of Agricultural Implements and Machines, would find this an excellent opportunity.

In the event of no sale being effected, the proprietor will put the premises in repair, and lease them, on liberal terms to any competent party desirous of having a mill privilege in this populous vicinity.

Particulars may be known by applying to Wakefield & Coate, Auctioneers, Toronto.

July 1st, 1861.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,

Toronto, 1861. *Secretary.*

SEEDS! SEEDS! SEEDS!

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CORNER OF FRONT STREET AND WEST MARKET SQUARE.

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THE SIXTH ANNUAL EDITION OF HIS PRICED CATALOGUE

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The satisfaction so generally expressed by those with whom he has had the pleasure of dealing heretofore leads him to hope that he will continue to receive a large share of the Public patronage.

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J. A. SIMMERS
Seedsman.

Toronto, April, 1861. 4-t.

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N. B. Full blooded cow stock taken in exchange, if desired.

Brantford, April 8th, 1861. 4-t

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St. Lawrence County, New-York,
or at the *Agriculturist* office, Toronto.

March 9, 1861. 6t

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TO LANDED PROPRIETORS.

AN experienced English Agriculturist, for several years practically acquainted with the Canadian Farming, wishes to undertake the management of a Farm, either on shares, or as Bailiff to the owner.

Satisfactory references and testimonials given by addressing AGRICULTURIST, *Post Office Paris, C. W.*

Paris, C. W. June, 1861 3t.

The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

Subscription—Half a dollar per annum for single copies; Eleven copies for Five Dollars; Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of University Collge, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, JULY 16, 1861. No. 14.

On the Growth of Red Clover.

Clover, with Timothy, will, in all probability, continue to constitute in Canada, the principal material for soiling cattle or for the making of hay. These two grasses therefore are of the greatest importance in our system of agriculture, and whatever throws light on their improved culture, must be regarded with special interest by our farmers generally. In the older countries of Europe it is a common complaint that clover is deteriorating, both as to quantity and quality; and such soils are said to be *clover sick*. The only effectual remedy is to extend the rotation of cropping, or to bring clover round less frequently, say at intervals of five or six years, instead of three or four, and to apply artificial manures specially suited to the wants of the plant. In this country we do not hear much complaint of this nature, still in some places of the older settled districts, the clover crop appears of late years to have been under former averages; and some change of culture is evidently required. In most cases deeper ploughing, with longer intervals between the occurrence of the same crop, would unquestionably be found of great benefit. A deeper tilth would have the advantage of fixing the plant more firmly in the soil, and consequenty making it less liable to be thrown out by spring frosts; the greatest injury, perhaps, to which the clover plant is subjected in this climate.

Dr. Voelcker, Chemist to the Royal Agricultural Society of England, made a few years since a number of very accurate and original experiments on the growth of Red Clover; and from the details of the results, as published in the society's journal, we condense the following for the consideration of our readers.

"We are far from asserting" (remarks the Professor) "that there is evidence enough to show that the failure of clover, when grown too freqently on the same land, is altogether due to the want of a sufficient supply of certain organic compounds in the soil. At the same time, we think that the facts of agricultural and horticultural practice, as well as the evidence of direct experiment, must lead to the conclusion, that the view that the organic compounds of the soil are only valuable to plants as a source of carbonic acid, requires modification. It is, indeed, probable, that some plants derive a considerable amount of their substance from carbon compounds other than carbonic acid, and that others depend for their carbon mainly, if not exclusively, upon carbonic acid."

Such crops as, in the course of cultivation, are subjected to pretty natural conditions of growth, and which accumulate the greater portion of their substance during the period at which the sun's rays are known to be most powerful in influencing the decomposition of carbonic acid by plants, appear to depend chiefly on that source for their carbon. Those, on the

other hand, which are grown under somewhat abnormal conditions, and which store up a large amount of succulent products of a comparatively low degree of elaboration, are probably partly dependent on the carbon compounds, yielded by the soil. The leguminous crops, again, though coming generally more within the former than the latter category, still seem to be dependent, for luxuriant growth, more or less upon a supply within the soil of complex organic compounds.

It would appear, however, that whatever may be the precise result to which investigation may lead, in regard to the questions here involved: it may, at any rate, be pretty safely affirmed, that we shall not arrive at the true explanation of the phenomena upon which depend some of the most striking advantages of a rotation of crops, until we are better able than at present, to define the relations of the different crops to the different sources of *carbon* and of *nitrogen*.

The practical conclusions from this interesting enquiry may be very briefly stated:—

When land is not what is called "clover sick," the crop of clover may frequently be increased by top-dressings of manure containing potash, and suerphosphate of lime: but the high price of potash, and the uncertainty of the action of manures upon the crop, render the application of artifical manures for clover a practice of doubtful economy.

When the land is what is called "clover sick," none of the ordinary manures, whether artificial or natural, can be relied upon to secure a crop.

So far as our present knowledge goes, the only means of insuring a good crop of red clover is to allow some years to elapse before repeating the crop upon the same land.

Specific Gravity of Roots.

It is well known to farmers that turnips, beets, &c., differ considerably in their feeding properties, arising from the different varieties cultivated, the character of the soil, manures, climate, &c. Some very important experiments were made by Professor Sullivan, upon the varying specific gravity of our cultivated roots, the results of which were published in the *Dublin Agricultural Review*, a year or two since. He observes:—

"One of the most striking differences in quality, which roots exhibit, is that of relative amount of solid matter,—a difference which may be determined by ascertaining their specific gravity; the roots containing the least water being densest. I therefore determined to try whether the property of density could be propagated. For this purpose I selected three roots of white Silesian beet of nearly the same size, (2lbs, 6oz to 2lbs, 7oz,) but exhibiting as great a difference in specific gravity as possible."

The roots whose specific gravities were thus determined, were planted, and allowed to produce seed, which was sown, and the roots produced from them examined. The following table gives the weight of roots grown from parent seed, and per centage of solid matter:—

Specific gravity of parent root		1,070	1,050	1,030.
Weight of roots.		Per centage of solid matter.		
14 to 20 oz.	Max.	18.83	15.91	10.11.
	Min.	17.46	14 52	9.12.
32 to 46 oz	Max.	17.74	15.35	10.56.
	Min.	15.55	13,65	9.20.
48 to 60 oz.	Max.	16.15	15.47	8.75.
	Min.	14.80	13.89	7.87.

The professor reasons cautiously, as a chemist ever should, upon these results; but we heartily concur with him in deeming them worthy of extended repetition. That like produces like is a well known agricultural axiom; and we opine with the professor, that if we can by a judicious selection of roots for seed increase the *density* of the produce, we may also succeed in developing some particular constituent of more importance than the other. We shall watch the progress of discovery and improvement in these directions, with particular interest.

Harvest Prospects.

The accounts of the state of the grain crops in Canada are, perhaps, more than ordinarily conflicting at the present time. The late spring frosts in some localities, seriously injured the wheat plant, while in others the drought has been very severe on the spring crops. In some sections the reports of the crops generally, including hay, are pretty satisfactory, and in others highly encouraging. The midge, we are sorry to find, is doing its destructive work in some places, but not, we hope, to an alarming

extent. As yet we hear no particular complaint of rust. Considering the lateness of the spring, and the ungenial weather that has more or less characterized the growing season almost to the present time, the crops, upon the whole, may be regarded as better than at one period could have been reasonably anticipated: and we still think that if Providence favors us with favourable weather for the next few weeks, the crops, though late, will not fall short of an average.

We learn from the *Mark Lane Express* of June 24th, that the wheat crop in the United Kingdom, notwithstanding the late genial weather, could not reasonably be expected to reach an average. Owing to the wetness of the last summer and autumn, wheat-sowing was performed under most disadvantageous conditions, and the severity of the winter and early spring militated seriously against the healthy progress of the plant; besides, a much smaller breadth was sown with winter wheat than usual The most recent accounts from France afford no hope that wheat in that country will reach an average; and the same may be said of parts of Germany, Russia, and other great grain countries of Europe. Although the accounts from several sections of the United States may be regarded as favourable, the unhappy differences of that country must already, we should think, tend to diminish the amount of production, and should these unfortunate circumstances continue another year, it is much to be feared that the products both of the field and workshop will experience a serious diminution. In the present condition of the world we see no prospects of prices ruling low: and there is every motive for our Canadian farmers to get in as large a breadth of wheat as possible the coming autumn, and in the best practicable condition, with a reasonable prospect of remunerative returns.

The Horse when Dead.

Dr. Playfair the distinguished chemist, a short time since gave an estimate of the value of a dead horse. It seems that in London, the average weight of those slaughtered is about 950 lbs; the average value about 46 shillings. This weight and the chief purpose to which the different parts are applied, and their value, may be stated as follows:

	lbs.		
Hair	1½	8d to 1s. a lb	Hair cloth, &c.
Hide	30	8s	Leather.
Tendons	6		Glue.
Flesh	224	boiled, 23s	Dog's meat, &c,
Blood	60		Prussiate of Potash, &c.
Heart & Tongue			A mystery,
Intestines	80		Covering Sausages, &c
Fat	20	3s. 4d	
Bones	160	4s. 6d. per cwt	Knife handles, &c.
Hoofs	6	8s. to 10s. per cwt	Butons, &c.
Shoes	5	2s. to 10s. per cwt	Old Iron.

Pea Harvester.

Editors Africulturist.—As the subject of "Pea Harvesters" seems to occupy attention to a considerable extent, permit me, as I wish all my brother farmers to do, viz., express my opinion, if nothing more, on the subject.

Now my opinion is simply this, that it will be some time before the labyrinth of pea-vines will be unravelled by anything more successfully than by the "old scythe."

My system is something like this,—if the peas fall towards the east, (as they generally do) take your scythe to the south-west corner of the field, and mow towards the east until the swathe with all the vines under it will make a wad of the desired size, then step back, rolling it all along with you to the starting point, then step over to the left, and go on the same way, making the rows north and south.

A man will roll about 1 acre per day, and do it much cleaner than by any other method known to me.

I am pleased to see a prize offered for a "Pea Harvester" and would be highly gratified to see a creditable machine for that purpose at the coming Exhibition at London.

Moses A. Kitchen.

Bloomsburg, C. W.,
July, 1861.

The World's Exhibition in London next Year.

We learn that the Royal Agricultural Society of England have resolved to hold their annual county show next summer in London, so that it will become in a measure linked with the International Exhibition. The Prince Consort has consented to become its President for the year, and 26 acres of the Regent's Park have been granted for the purpose of the exhibition. The Highland Society of Scotland have agreed to suspend their show for 1862, and throw their energies into that of the metropolis.

The *Mark Lane Express* of June 24th observes :—

Two members of the Council of the Royal Agricultural Society—Mr. Thomson, M.P., and Mr. Brandreth Gibbs — have been appointed to act on the Central Committee for the class of agricultural machinery and implements, to see to a due representation being made, to encourage the production and preparation of suitable objects for exhibition, and to settle the distribution of space among applicants. It is highly desirable, therefore, that the two displays as regards agricultural machinery should harmonize well together.

* * * * * * *

Stepping from the Exhibition building in Kensington, after feasting their eyes upon commercial products and the result of the arts and manufactures of all countries, the visitors may have a taste of horticulture in the adjoining building, and pass on to live stock and farming implements in Regent's Park. The man who cannot gain some useful hints and practical information from this unprecedented combination of competitive display, must be boorish in the highest degree.

* * * * * *

Canada, Tasmania, and South Australia, it should be remembered, will be at this London exhibition in strong force, with their implements, samples of grain and pulse, and other seeds. The Cape Colony, Victoria, New South Wales, and Queensland, great wool-producing districts, will be there; good judges all of sheep and cattle, and with long purses ready to purchase anything that meets their approval for symmetry or blood. British Columbia, a young colony, but progressive, active and thriving, will be there also on the look-out for stock, and not unfitly represented in its agricultural produce.

Continental farmers from France and Germany, Belgium, and Russia will be there, scrutinizing with the glance of connoisseurs every good and bad point. Indeed it will be difficult to say what representatives of countries will be absent, except, perhaps, the fratricidal Americans, who, alas! are more intent at present on the bowie-knife and the rifle than thinking of displaying their labor-saving machines, their bread-stuffs, cured provisions, and their general agricultural progress. And yet, not very long ago there was a more hopeful prospect in view; for at the annual meeting of the State Agricultural Society of New York, a resolution was passed, calling the attention of American manufacturers of agricultural machinery, to the exhibition of industry of all Nations to be held in London next year. The leading agricultural journal there expresses the hope that their manufacturers will not allow the coming opportunity to escape them of representing abroad, fairly, whatever progress they may have made during the past ten years in the department of effort.

In all the British colonies a prominent interest has been given to the representation of agricultural industry at the International Exhibition; and even in most of the Foreign States some eminent man connected with agriculture is associated with the executive commissioners. In Canada, the commission appointed acts in conjunction with the Provincial Board of Arts and Manufactures and the Boards of Agriculture of Upper and Lower Canada, to superintend the judicious expenditure of the large sum, £8,000, voted by the Legislature. Canada reaped so much credit and advantage from its exertions in connection with the past exhibitions at London and Paris, that it has every encouragement to repeat its efforts. In France the Minister of Agriculture and Commerce is charged with the execution of the decree for the transmission of French products, to the Exhibition. In Belgium, among the directing commission charged with the organization and control of the representation of Belgian products we notice the name of M. Bellefroid, Director-General of Industry and Agriculture. Indeed, there is scarcely a Continental State or British Colony that does not intend to send some official intimately connected with agricultural improvement.

There are several vegetable products that will be shown of the greatest interest, in a commercial point of view, to this country: among the chief of these are timber, fibres, and paper materials.

We shall, judging from the accounts already received, have a magnificent collection of timber, of which we stand so much in need at present. British Columbia, Canada and the Lower Provinces, British Guiana, the Cape Colony, Western Africa, Tasmania, New Zealand, and Queensland will come out especially strong in this article. Not specimens of exceptional character only will be sent, but such as will fairly represent what the colonial hard woods really are, showing their density, durability, and other properties that may recommend them to the engineer and ship-builder, when cut at the proper season and otherwise under favourable circumstances.

For vegetable fibres in a manufacturing point of view, adapted for cordage and textile uses, there is also an increasing demand in this country. Our wants for home consumption and export are extensive; and we do not care to be so largely dependent on foreigners for our cotton, hemp, and flax. The new fibrous substances introduced and utilized have shown that there is abundant room yet for belief that materials every way suited for spinning may be found that will come in aid of existing materials; while the attention now given in our own colonies to this production of the well-known staples for our textile manufactures, holds out the promise of a better supply for the future.

It has come now to be understood, even beyond scientific circles, that rags are valuable to paper manufacturers only because they consist

of vegetable fibre—cotton rags of the fibre of the cotton plants, linen rags of the fibre of the flax. Straw, the leafy covering of the ears of maize, the stalk of the sugar-cane, and other substances, have been drawn upon, dispensing with the agency of the cotton-spinner in the manufacture of paper, and dealing in the first instance with the vegetable fibre, without subjecting it to the necessity of being woven, and worn, and worn out, and given to the rag-merchant. In America, by the application of some patent process of steam-digestion, the fibre of various forms of vegetation is at once rendered fit for the paper mill. Most of our colonies possess this fibrous vegetation in infinite quantities.

From the lessons to be learnt at the International Exhibition and the metropolitan annual show of the Royal Agricultural Society next year, results may spring fraught with great benefit, not only to Great Britain, but to many other countries; and the decennial stock-taking of our agricultural progress cannot fail to be satisfactory and creditable.

From the above, and similar remarks in other journals, it will be seen that the Colonies of the British Empire are making preparations for the forthcoming exposition of the world's industry, *and that Canada is expected to take her share in this great movement.* References have been frequently made to the distinguished position which we won at these Exhibitions, first in London, in 1851, and then in Paris, in 1855; and the benefits that we derived therefrom must have been many and great. The eyes of the civilized world were upon us, and Canada, instead of being regarded as a vast region covered during the greater part of the year with ice and snow, was seen to possess agricultural and minera esources, that really astonished the millions who witnessed the result. What, we ask, is now being done towards placing this Province in the proper position, in London, next Spring? As yet we hear of nothing being done in the matter by public bodies, which, only, are capable of doing the work throughly and successfnlly. The Legislature was petitioned last session by the Boards of Agriculture, and of Arts and Manufactures of both sections of the Province for pecuniary aid, in making the necessary preparations, but nothing was done. The Board of Upper Canada have had the matter under consideration, and will no doubt do as much as their limited means will alow. But the Boards of Arts and Manufactures cannot move at all without special aid from government. The articles that come within their province are more or less costly, and require considerable time and care to prepare. In nine short months the Exhibition will be opened, and we cannot, therefore, afford to lose a moment. The time that yet remains will be found too short to do justice to ourselves, unless the matter is taken up at once, and prosecuted with unflagging perseverance. To allow the approaching opportunity to pass unimproved, rather than expend a few thousand dollars in the needful preparations, will be regarded by the reflecting portion of the community as unwise economy. Canada is expected to take her place among the fraternity of nations in the metropolis of the empire, next May, and if, unfortunately, she should be absent, she will be called upon, from various quarters, to state "*the reason why.*" Such an occurrence in the recollection of former precedents would brand us in the eyes of the world with the mark of retrogradation.

Breeding Stock.

This subject is less understood by people in this country than is almost any other which falls under their observation. The breeding and rearing of stock, especially animals of high and pure blood, is, however, attracting increased attention from the scientific and enlightened agriculturist; and when the farmer succeeds in obtaining animals possessing the qualities sought for, it is not unfrequent that many are disappointed in the progeny of even the purest and most renowned pedigree. Even among the enlightened it is more than intimated that animals possessing really superior qualities owe their excellence mainly to the care bestowed upon them in regard to feed, &c. Hence arises the question, why comes this disappointment, and why such discrepancies of opinion? All are accustomed to rely upon *experience*, and many have *experienced* a grevious disappointment in not finding the young to resemble the sire of the dam, as the case may be, as closely as they had hoped; and, without being able to account for this fact in accordance with any laws known to them, and only knowing that *they* have failed of the expected improvement in their animals, they have naturally come to deny, or at least doubt, what others have promulgated, and hence have abandoned the enterprise which is thus checked by the influences of these failures. The English breeders seem to understand the *causes* of these failures, and, of course, how to avoid them. These *causes* are plainly indicated in the "Veterinary Journal," and it would be well if this information was more generally disseminated

in this country. The reason there given is this: The mother's system is influenced and changed by the young she carries in her womb, and if the male parent be of a different breed, her blood is contaminated, and she rendered similar to a mongrel for the remainder of her life. This assertion may startle many, but it is claimed that no physoiological *fact* is more susceptible of proof than this, and a few instances noticed by Dr. Harvy, Physician to the Aberdeen Royal Infirmary, would seem to demonstrate such a *fact*. He speaks of a young chestnut mare, seven-eights Arabian, that belonged to the Earl of Moreton, which was covered by a quagga, a species of wild ass from Africa, and marked somewhat after the manner of the zebra. The mare was covered but once by the quagga, and after the pregnancy of eleven months and four days gave birth to a hybrid, which had distinct marks of the quagga in the shape of its head, black bars on the legs, shoulders, &c. Two years after, also the third and sixth years respectively, the same mare was covered by a very fine black Arabian horse, and produced three foals, all of which bore unequivocal marks of the quagga.

Another case similar to the foregoing one: A mare belonging to Sir George Ousely was covered by a zebra, and gave birth to a striped hybrid. The next year this mare was covered by a thorough-bred horse, and the next succeeding year by another horse. In this instance also both the foals were striped, and in other regards partook of the zebra. It is a matter of common observation that when a mare has borne a *mule* she is never after fit to breed colts, as they will have large heads, and otherwise resemble the mule. Each of the mares alluded to were, in the first instance, covered by animals of a different *species* from themselves; but other cases fully as conclusive where they had only bred from horses of different *breeds* in successive years, and yet the offspring portook of the characteristics of the horse by which the *first* impregnation was effected.

Mr. McGillivray speaks of several colts in the royal stud at Hampton Court, that were sired by the horse *Actœon* that did not resemble *Actœon*, the paternal parent of the foals, but did bear a resemblance to the horse Colonel, from whom the mares had brought colts the year previous to their being covered by the horse *Actœon*. Again, of a colt, the property of the Earl of Suffield, which was got by the horse Laurel, that it was strongly intimated by the jockeys at New-Market that he *must* have been got by the horse Camel. This resemblance was, however, accounted for by the fact that the mare had been previously impregnated by Camel.

Similar instances have also been observed in regard to other species of animals. Mr. McG. mentioned the following: "A pure Aberdeenshire heifer was served with a pure Teeswater bull, to whom she had a *first cross calf*. The following season the same cow was served with a pure Aberdeenshire bull; the produce was a cross calf, which at two years old had very long horns, the parents both hornless. Another: A pure Aberdeenshire cow was served with a cross bull, i. e., an animal produced between a first cross cow and a pure Teeswater bull. To this bull she had a cross calf. Next season she was served with a pure Aberdeenshire bull; the calf was quite a *cross* in shape and color. The same gentlemen, who is good authority, says "many more instances might be cited. *Among cattle and horses they are of every day occurrence.*"

This mode of impairing the purity of the blood of animals has been styled *crossing the system* of the mother. Dr. Harvy also records numerous instances of similar results as having occurred in the *human* family, but these cannot be included in this article. It is inferred that the reason why so many inferior animals are to met with, the progeny of parents of pure lineage, is almost wholly owing to the blood of the mother having been previously contaminated by the cross-bred young she has carried. Of the modus operandi of this contamination there is no explanation given which is generally satisfactory; but it seems probable that inasmuch as the *same blood* must circulate through the veins of both mother and offspring, the system of the dam becomes modified and rendered in a greater or less degree similar to her mongrel young. Sure it is that in view of the vast interest involved in this subject, "the theory thus vindicated by these and other eminent breeders," renders this subject well worthy the special attention of all those interrested in agricultural pursuits in our country.—*Country Gentleman.*

The Mutual Relations of the Vegetable and Animal Kingdoms.

[The following paper was read by Mr. J. G. Hobson, of Long Sutton, Lincolnshire, at the last monthly meeting of the London or Central Farmer's Club, on June 3rd.]

When the subject on the card was first suggested, it was in the hope that some accomplished member of the Club, specially qualified for such a task, would give us the benefit of his researches on a theme of such unbounded interest. Failing that, when the committee honored me with the charge of this paper, from that very time I became deeply sensible how utterly unqualified I was to grapple with a subject of such gigantic proportions, and I should deem it peculiarly unfortunate if any one present to whom I am a stranger (for none else are in danger) should expect anything from this opening paper original in science or novel in practice. I do not pretend to advance anything which is not easily accessible to any of my brother farmers,

to us who spend our lifetime among the objects and in the study of natural history—the whole volume of Nature is unrolled before us, "written," to use the impressive words of Lord Bacon, "in the only language which hath gone forth to the ends of the world unaffec ed by the confusion of Babel." Permit me with all deference to state, that, in my opinion, we men of practice have been far too exacting, in insisting on a direct and immediate practical issue to every inquiry. Liebig tells us "it is not at all the province of sicence too seek out the means of increasing produce or augmenting incomes. She inquires not after what is profitable; this belongs to the experimental art, with which she has been confounded. The business of science is to seek for causes, and, like a light, to illuminate the surrounding darkness. Science confers power, not money: and power is the source both of riches and of poverty—of riches when it produces, and of poverty when it destroys; it is expended by use, and revived by supply. "When this line of demarcation shall be better understood, and the philosopher in his high walk of science, and the practical man in his humbler sphere of application, shall arrive at a thoroughly good understanding and mutural co-operation, then will such an impetus be imparted to agricultural progression, as the pure matter-of fact man (if outside these walls such a genus be still in existence) never yet dreamt of. The old cynical '*Cui bono?*' cry is fast fading away, and I trust that its dying echoes will not linger among the farmers. The wonder is that its dark council should so long have withstood the light of advancing science. Who shall be rash enough to predict what will be the limit of practical application in any investigation, however apparently remote? And here, gentlemen, on the very threshold of our inquiry, we are exposed to the old conflict. Though I do not suppose that we are likly to plead guilty to every count in the charge of severe criticism preferred against us in the last book of the great German chemist Liebig, still, I think we must all, however unwillingly, acknowledge that much of what is alleged against us, as a body, carries along with it the conviction of truth, and claims our earnest and dispassionate consideration, with a view to deliver Agriculture as speedily as pos sible from such a notoriously anomalous position, prejudicial at once to its present security, and a serious hindrance to its future progress. While we very complacently take credit, for what in the language of courtesy is called "applied science," how little do we realize what a vast change it would produce, with what amazing results it would be attended, if in regard to Agriculture it could be said to be *literally* true, that she fully appreciated and energetically applied those great principles which science, by slow, patient, and laborious research, has proved to be at the foundation of a rational system of agriculture! Let any one take notes, by the way, as he traverses the length and breadth of the land, and see how the exception establishes the rule.

It is, I take it, one of the great objects of this Club, not so much to introduce what is new, as to examine and dicuss what is known and approved by the few, and so far as it will endure the test of enlightened practical experience, to recommend it by its sanction for general adoption. No wonder that any observant mind should become bewildered and almost lost, amidst the vast variety of small and vegetable life which surrounds it. The objects before us are illimitable, and all we can hope for, to-night, will be just to glance almost promiscuouly at some few of those beautiful analogies and connections which exist between the animal and vegetable kingdoms, proving their entire dependence upon each other—their adaptation and mutual relations, with a view to practical agriculture, "showing the whole living kingdoms of Nature to be parts of one vast plain, the work of one Almighty and Omniscient Creator." Atlhough our humble task to to-night will be chiefly to examine and exhibit some few of those brilliant discoveries which are become the common property of every intelligent mind, and, although I shall quote freely (for our security) the very words of those who are entitled to speak with authority, rather than weaken the force of original statements or recorded experience by any vain attempt at tranposition of my own; still I crave and peculiarly need your indulgence, not only on account of the limited powers and very slender resources I have at command, but also for deviating in some measure from that *directly* practical view, which I know to be the chief end and aim of these discussions. And here I trust I may look for your substantial aid to develope, more forcibly than I may be enabled to do, some of those practical applications from the storehouse of your experience, of which the subject may seem to you to be susceptible. "Vegetables, constitute that produce of the earth which is essential to the existence and requisite to the comforts of mankind." "In the pre-Adamite earth there was a period revealed by geologists when no traces of plants or animals, or of their organic remains, were to be found—termed 'the azoic period,' or lifeless. It is a strange and interesting circumstance, that we can arrive at a *beginning* of animal and vegetable creation, and contemplate tne state of the globe before the first pulsation of organic life stirred within its precincts, creation consistingly progressing from the inferior to the superior forms of organic life, leading to the conclusion that the first created of living beings could not have ranked higher in the scale of physical organization than a zoophyte, or animated plant, as the term imports—a creature which holds position in the scale of being intermediate between the animal and vegetable, partaking of the natures of both, and wholly devoid of the higher organs of sense,

such as sight and hearing. "The great column of being," says Hugh Miller, "with its base set in the sea, and inscribed, like some old triumphal pillar, and with many a strange form at once hieroglyphic and figurative, bears—as the ornately sculptured capital, which imparts beauty and finish to the *whole*—reasoning, responsible man.

There is surely a very wonderful harmony manifested in the proportions of that nice sequence, in which the invertebrates, the fishes, the reptiles, marsupials, the placental mammals, and, last of all, man himself, are so exquisitely arranged. Of one of our domestic tribes no trace has yet been found in the rocks. Like the cod family among fishes, or the rosaceæ among plants, it seems to have preceeded man by but a very brief period. I refer to the sheep—that clothes civilized man everywhere, in the colder latitudes, with its fleece—that feeds him with its flesh—that gives its bowels to be spun into the catgut with which he refits his musical instruments, and whose skin converted into parchment, served to convey to later times the thinking of the first blow of the human intellect across the dreary gulf of the middle ages." "Vegetation inconceivably exceeding in vastness all that we now know," says Arnott, "grew and faded alternately upon this globe during many ages, while they were apparently useless in creation. It was allowed to run waste, because it was waste that the Omniscient Operator wanted as the raw material of the manufacture which he had in hand. Soft, deep, damp soils and hot steaming skies brought forth herbs and trees with a luxurince that baffles our imagination, now that it has passed away from the senses. These were deposited in layers along broad valleys, covered over, hot-pressed, and caked into coal, that it might keep till it should be required as fuel for the *coming man*. When the fuel was stratifying and crystalizing and caking, man was designed and promised; the coal measures promised him. For men these stores were provided, because he only can use them: no species of animal except the human has sufficient skill to light a fire." The gorilla, whose company has been so much sought after by the philosopher and the multitude, likes well enough to warm himself by the negro's fire; but, with all his vaunted sagacity, he skulks away from its dying embers, for he knows not how to add "fuel to the fire." Well it is so. Otherwise, what terrible destruction might be brought about! If any be disposed to doubt the practical issue of this part of our inquiry, taking man as the *great central figure* of our theme, let him conceive, if he can, the fatal paralysis which would seize upon the world, driving back the tide of its advancing civilization, and especially would it be disastrous to England, with her manufactures, her commerce, and her agriculture—if these two elements of power, coal and iron, were blotted out of the stony book of creation. Then would she look in vain for them in their most wonderful combination—the *steam engine*. Millions of men and horses would utterly fail to undertake the giant's daily task; millions of acres of valuable land must be *misapplied* to their maintenance. The remains of a vast and extinct vegetation is made a substitute for the labour of the living animal, and man, released from the drudgery of incessant toil, is better fitted to fulfil his nobler destiny as an intelligent and morally responsible creature. Agriculture is only just beginning to feel the impulse which she must one day realize through the mighty energy of steam. "There is a ceaseless round of force mutation throughout nature," says the *Cornhill Magazine*, "each one generating or changing into the other. So that force which enters the plant as heat and light, &c., is stored up in its tissues, making them organic. This force, transferred from the plant to the animal in digestion, is given out by its muscles in their decomposition, and produces motion, or by its nerves, and constitutes nervous force—force stored up in the body—resistance to chemical affinity; this force proceeds directly from the solar rays." These influences have an important bearing upon the feeding of stock and the growing of corn, especially in our short summers, when the climatal influence of light and heat are below the average, and so incapable of thoroughly ripening the grain. Has the overluxuriance and weakness of straw, frequently observed over a large wheat growing area, anything to do with the stimulating treatment of high farming and special manuring, on the one hand? or is it attributable to a constant drain of phosphates, and a too monotonous rotational cropping, on the other? or is it (as has been ably suggested) from a constitutional change in the soil, from physical and physiological causes?" Will deep stirring by steam culture prove favorable or otherwise to early ripening? The beautiful harmony that exists between the animal and vegetable kingdoms has not a more striking and important illustration than is to be seen through the medium of the atmosphere. Let us hear Maury's fine descriptive words: "to him who studies the physical relations of the earth, the sea, and the air, the atmosphere is indeed something more than a shoreless ocean, at the bottom of which he creeps along. It is an envelope or covering for the dispersion of light and heat over the surface of the earth; it is a sewer, into which, with every breath we exhale, we cast off a vast quantity of dead matter; it is a laboratory for purification, in which that matter is recompounded and wrought again into wholesome and healthful shapes; it is a machine for drawing up all the rivers from the sea, and conveying their waters from their fountains, in the ocean, to the sources in their mountains; it is an inexhaustible magazine, marvellously adapted for many benign and beneficent purposes. Upon the proper working of this machine depends the well-being of every plant and animal that inhabits the earth." "It is well known," says

Dr. Carpenter, "that when an animal is confined in a limited quantity of air, it soon vitiates it, or renders it unwholesome; so that free ventilation by which the foul air is replaced by fresh, is one of the most important means of the preservation of health.

Now this change in the air is effected by its oxygen, which is the element that chiefly supports the life of all beings, and by the substitution of carbonic-acid gas set free from the lungs of animals. Thus the blood is purified, and is rendered more capable of maintaining the life of the system, by receiving one of an opposite character, and the change is manifested in its aspect as well as its properties, the dark purple blood of the veins being converted into the bright scarlet fluid of the arteries. It is the office of plants to decompose this carbonic-acid gas, fixing the solid carbon in its tissues, setting free the oxygen, and so restoring the purity of the air." Will you indulge me for a minute in a poeticised illustration which I turned up some twenty years ago, and thought a gem: "The carbonic acid gas with which our breathing fills the air to-morrow will be speeding north and south, striving to make the tour of the world. The date trees that grow round the fountains of the Nile will drink it in by their leaves; The cedars of Lebanon will take of it to add to their stature; the cocoa-nuts of Tahiti will grow riper on it; and the palms and bananas of Japan change it into flowers. The oxygen we are breathing was distilled for us some short time ago by the magnolias of the Susquehana, and the great trees that skirt the Orinoko and the Amazon: the giant rhododendrons of the Himalayas contributed to it, the roses and myrtles of Cashmere, the cinnamon trees of Ceylon, and forests older than the Flood, buried deep in the heart of Africa, far behind the mountains of the moon. The rain which we see descending was thawed for us out of icebergs which have watched the pole star for ages, and lotus-lilies sucked up from the Nile, and exhaled as vapor, the snows that are lying on the tops of our hills." Thus we see that "the two great kingdoms of nature are made to co-operate in the execution of the same design, each ministering to the other, and preserving that due balance in the constitution of the atmosphere which adapts it to the welfare and activity of every order of beings, and which would soon be destroyed were the operations of any one of them to be suspended. And yet man, in his ignorance and his thirst for worldly gain, has done his utmost to destroy this beautiful and harmonious plan. It was evidently the intention of the Creator that animal and vegetable life should everywhere exist together, so that the baneful influence which the *former* is constantly exercising upon the air, whose purity is so essential to its maintenance, should be counteracted by the *latter*."

These principles involve the question of life and death to thousands every year. Take a witness from the Registrar-General's report: "In Scotland last year, in eight of the *largest* towns, mortality was at the rate of 286 in every 10,000, in smaller towns 221, in rural districts only 170." An apartment for a prison in England (would that it were all the world over) has an allowance of 1,000 cubic feet of air; but in the confined dwellings of Glasgow closes, the average is 175 cubic feet. No wonder, then, at Mr. Edwin Chadwick's remarkable observation, that more than 200,000 deaths occur every year in Great Britain from preventible causes, or, in other words, that, were proper sanitary measures adopted, fully one-half the usual number of deaths world be spared;" and Lord Stanley tells us, in eloquent words (I have not time to quote at length), that *that* is the least part of the result. "The real and lasting injury," he says, "lies in the deterioration of race, in seeds of disease transmitted to future generations, in the degenerency and decay which are never detected till the evil is irreparable." Begg, when speaking of the both system, styles it "a rude monachism, existing vastly to the destruction of morals, and is the opprobrium of Scotland;" and of the female bothies he says, "nothing more attrocious ever existed in rural life." I trust that practically-remedial results will follow the renewed agitation of this painfully-important subject, not only before the court of Parliament, but also before an *enlightened public opinion*, at length thoroughly aroused to the discharge of its grave responsibility in the cause of humanity, morality, and true national policy. The comparison of the process going on in the body, to a furnace with a limited supply of air, is not only an illustration, but a real truth. Messrs. Laws and Gilbert, to whom agriculture is deeply indebted for laborious research and accurately conducted, skilful experiments, give us the following curious and interesting results in relation to respiration and the feeding of animals, bringing to our view a striking instance of the mutual adaptations which are traceable in the practical operation of natural laws: "Under given circumstances, the *leguminous* crop will give a much larger yield of nitrogen than the *cereal* grain; and an increase of produce of the latter is not obtained, except at the cost of more nitrogen in the manure than is obtained in this increased produce, whilst in point of fact, in the practice of rotation in this country, the growth of the leguminous, corn or fodder crop, with its large per-centage and actual amount of nitrogen, is itself frequently either the direct or indirect source of nitrogenous manure, by which the increased cereal is obtained; and, again, this cereal, obtained at a cost of, but with its lessened produce of nitrogen, is found in practice to be of equal, or of a more highly-feeding value than the more highly nitrogenized leguminous product, which perhaps has been expended to produce it. It would thus appear, therefore, that the demands of the *respiratory function*,

which, again, more than any other regulate the consumption of food, would in point of fact not be satisfied in the use of the leguminous diet, unless by an expenditure or consumption of an amount of nitrogen beyond that which the due balance of the constituents of food would seem to require; whilst, on the other hand, in the use of cereal grain, its better proportion of respiratory food in the direct use of the highly-nitrogenized leguminous seeds, or in the better balanced diet of the cereal grains, in either case the end is attained only at the cost of nitrogen, in the one case by a larger amount of it in the food than the due balance of constituents would seem to require; whilst, in the other, this due balance has not been attained without a loss of nitrogen during growth. The claims of health and natural instinct generally leave little doubt which alternative should be adopted, in the case of human food at least; and it becomes us, therefore, to investigate and understand the practical bearings of these curious and interesting facts, for upon the principles they involve depend much, for their success, those fundamental practices of the farm—the feeding of stock, for their double products of meat and manure, and the adaptation of our rotations."

(*Concluded in next number.*)

Agricultural Intelligence.

Fortunes Made by Farming.

It is a common, and, we think, correct conviction that large fortunes are seldom made by farmers. There are, however, exceptions. Agriculture, as a pursuit, probably yields about the average rate of profit on the capital employed as compared with that of commercial undertakings, when the losses, which are often heavy, attending the latter, are deducted. There is generally much less risk in farming than in manufactures and commerce; and industrious, economical habits, guided by a sound judgment, will scarcely, in any instance, fail in securing a comfortable competency. There are thousands of farmers in Canada who are now comparatively wealthy, who came to this country twenty or thirty years ago almost without a shilling. The following instances of success in farming are taken from an article furnished the *Boston Cultivator*, by that well known agriculturist, Mr. John Johnston, of Geneva:

Some sixty years ago, a man came to Western New York from New England or New Jersey, I am not certain which, his axe and a little loose change being about all the property he had. He worked several years for different farmers, and then bought land for himself. He now has a farm of 600 acres or more, has given two sons each a good farm, and pays taxes on *two hundred thousand dollars* of personal property. He has never had any business but farming.

I know another man whose father left him a farm of about 200 acres, something over thirty years ago, with some encumbrances on it in the shape of legacies to other heirs, who now has over 400 acres of land, and *fifty thousand dollars* at interest. He also has done no business but farming.

Several men have worked for me, who, though they had nothing when they came, are now well off. A young Scotchman worked for me over thirty years ago who had but three cents when he began, but who now has a good farm of 200 acres, well stocked, and he is free from debt. He knew how to do the mechanical part of farming thoroughly, but knew nothing of speculation. I could name others who have acquired fortunes wholly by farming.

A farmer of small means should be very economical and still very liberal. He should be economical in dress for himself and his family, and in his dwelling and furniture; he should be liberal in feeding his stock, manuring his land, and in supplying labor to work his land. I have seen many farmers whowere kept always poor by trying to do too much work for the number of laborers employed, whereas if they had hired double htelabor it would have paid abundantly. This is a very common mistake.

Exportation of Shorthorns from the United States to England.

The following information from a recent number of *Bell's Messenger*, an old weekly agricultural paper of good authority, published in London, will prove interesting to our readers generally, more especially to those that are practically engaged,—and we have now many such in different sections of the Province,—in the improvement of the breeds of cattle. We have now on this continent commenced repaying England, in kind, for what we have long been receiving from her; and this importation will afford conclusive evidence that the soil and climate of this portion of North America are admirably suited, under proper management, to the highest development of the world renowned Shorthorn. We have breeders in Canada who, if they could spare their animals, might follow Mr. Thorne's example with a like success:

On the 29th ultimo we had an arrival of

"Dukes and Duchesses" from the United States. Most of our readers will remember that in 1853, Mr. Thorne, and Messrs. Becar and Morris, from the United States, were present at the great Tortworth sale, and carried away the Duchesses 64 and 66, for 600 and 700 guineas respectively, besides other animals of the Oxford tribe, bred by the Earl Ducie, and originally from Mr. Bates. Subsequently Messrs. Becar and Morris sold the whole of their herd to Mr. Thorne, who, in the course of a very short time sold £6,000 worth of drafts from it. Mr. Thorne had previously spent upwards of £20,000 in the formation of his herd. Both of the Tortworth Duchesses and their produce thus fell into his hands; they have, however, hitherto bred mostly bulls, so that the number of the Duchess tribe now in America is not very large. The arrangement by which some of them have come back to this country has been negociated by Mr. Strafford. He sent the Tortworth Duchesses across the Atlantic, and it was only fair that he should do his best to bring their produce back. The following notes respecting them will interest our readers:

The "5th Duke of Thorndale," hired by Mr. Langston, M. P., died upon the voyage. The "2nd Duke of Thorndale," calved in April, 1858, has been bought by Mr. C. Howard, of Biddenham, and Mr. Robinson, of Clifton Pastures; he is a grandson of the 700 guinea cow, Duchess 66, and of pure Duchess blood. The "4th Duke of Thorndale," calved February, 1859, is a son of the 700 guinea cow, and own brother to the dam to the celebrated Duchess 77, which took so many prizes last year; Mr. Hales, of North Erith, had secured him. Mr. M'Intosh, of Havering Park, Essex, has purchased the "3rd Duke of Thorndale," calved August 28, 1858, a grandson of Duchess 64, the 600 guinea cow—a son of her daughter, "Duchess of Thorndale,' a cow bred in the States, to which his sire, Grand Turk, the 2nd prize bull at the Chelmsford meeting, was put by Mr. Thorne. The Thane of Oxford and Imperial Oxford look full of promise; they are respectively grandson and son of Oxford 13th, a cow of Mr. Bates' breeding, sold as a calf at the Kirkleavington sale for 60 guineas. One of these has been engaged by Mr. Lawford, Linslade, Bedsford. The only female, a choice heifer, 4th Lady of Oxford, granddaughter of Oxford 13th, has been sold to Mr. M'Intosh.

Those of our short-horn breeders who have seen the animals since their arrival have expressed their admiration at their character and condition, and have spoken in very complimentary terms of Mr. Thorne's management. As the best proof of the opinion which is entertained on this point, we understand that every animal has been sold, a fact which must be highly gratifying to Mr. Strafford, as well as to Mr. Thorne.

The Bath and West of England Agricultural Show at Truro.

The Annual Exhibition of this long established Society was held this year in the picturesque little town of Truro, in Cornwall, the beginning of June; and it appears to have been a great success. Cornwall is said never before to have known such a complete gala week, and the Society received at the gates nearly £3,000! The week was commenced by a procession to the station to meet the President and Council; a short adjournment was then made to the Town Hall, and, after Divine service, and an appropriate sermon by the Rev. Chancellor Philpotts at the Parish Church, the procession was re-formed to the Show yard, and the exhibition opened in due form. Never, says the *Mark Lane Express*, was a district more apt to learn the lesson offered it, and rarely has the Society been so well repaid for the courage which it evinced in "breaking fresh ground." The entries in the agricultural department were nearly as numerous as in former years in more central and populous portions of the country; viz: cattle, 134; sheep, 234; horses, 89; pigs, 42; sent by 143 exhibitors, from 11 different counties. Their quality, on the whole, was pronounced excellent. The implement department was excellent, most of the principal manufacturing firms being represented. It is a peculiarity of this Society that no premiums are awarded for implements and machines, which are simply exhibited and put in working order for the inspection of visitors; leaving each observer to form his own conclusion. The *Mark Lane Express* thinks that this system is defective, and that it will not continue many years. The Society adopted it, we believe, some three or four years ago, principally at the request of several leading manufacturing firms. Certainly it would not do for this side of the Atlantic. Till very recently Cornwall, which forms the south west corner of England, had no railway communication with the rest of the country, and was consequently isolated. The subjoined remarks of Mr. Smith, the Chairman of the Cornwall Railway, will be read with interest in Canada; showing as they do the intimate connection that

subsists between railways and an advancing agriculture:—

In returning thanks for the railway companies, Mr. George Smith, the chairman of the Cornwall Railway, said:—"Our railway system bears upon agriculture at this end of the peninsula more directly and more importantly than is generally understood. The western part of Cornwall is fruitful in agricultural resources. It is rich in its soil, favoured with an unexampled climate (so far as England is concerned), and is capable of producing early vegetables beyond any other part of England. Now, the cultivation of the soil I know very little of; the improved cultivation of the soil I know still less of; for these are points which do not come before me practically; but as a merchant I know, as you all well know, that in spite of the most arduous labor, and the exercise of the greatest skill, without a market you do nothing. The market is the thing wanted. You all want to bring agricultural produce within the reach of the millions of our country, and I beg to say that these efforts of the railway companies enable you to do all this to an extent never imagined. It is telling upon the value of land, and tending to develop the resources of our soil in a way Cornwall never dreamt of before. I had a paper put into my hands just now, containing two or three figures. I'll just trouble you with some. From the 4th of December last to the 23rd March, just four months, there passed over the West Cornwall Railway, and was transferred at the Truro station of the Cornwall Railway for transit to the other parts of the country, 6,986 crates of brocoli, weighing in the aggregate not less than 866 tons 11 cwt., and I beg to say that the land conveyance of nearly 900 tons of brocoli in some three or four months from the west of England to the millions of London and the North was an impossibility until the appearance of the locomotive. Again, from the 22nd of April to the 7th of June—a period of six weeks only—there was conveyed and transferred in a similar way, 8,566 baskets of potatoes, weighing 439 tons. Four hundred and thirty-nine tons of early potatoes transferred from the west of Cornwall in about six weeks, to a good market in the large and populous districts in the kingdom is no bad illustration of the aid railways extend to agriculture. We are not a fishing company here. But all Cornishmen are interested in fish, and just allow me to mention that from the 9th of March to the present day the West Cornwall Railway brought, and there was transferred at Truro 34 500 baskets of fish, weighing no less than 889 tons. Has this nothing to do with the prosperity of Cornwall? Will land here eventually be worth ten times as much as now? Will land within twenty miles of London continue as valuable as now? These are important questions the great equalizer, the railway, will aid you to solve, but it seems tolerably clear that the railway has had, and is destined to have, an important influence on agricultural prices and profit. And, therefore, in acknowledging your kind compliment to the railway company, it is impossible for those who have for the last twenty years labored to bring about this state of things to avoid a little self-gratulation. Allow me, for a moment, to utter a few words which may counteract an impression my figures may have caused. The markets of the metropolis and the north still demand, and demand infinitely more than you can possibly supply. Talk of 800 tons of brocoli, what would 80,000 tons be to them? They would soon eat them all. If you send ten times as many potatoes, all will be devoured. If you send ever so much more fish, all will be eaten up. You are not supplying London, you only help the market in a very limited way; not one Londoner out of twenty tastes your early potatoes; you can go on with your work of producing heavier crops and reclaiming waste land, for you can find markets for ten times as much as you have hitherto raised. We will convey them for you, and earn, for the encouragement of such humble individuals as myself, fresh praises and renewed encouragement from the Bath and West of England Society."

French Agriculture.—As on all former occasions of walking abroad in the immediate neighborhood of Boulogne, I was again struck with the close resemblance these cultivated heights bear to those on the opposite cliffs of Thanet, except in the husbandry. The French farmers set peas and horsebeans together. Sections of this medley crop are cut green, and given to horses, cows, and sheep. The remaining portions are permitted, if there be green meat enough of any other kind, to stand till September. Mangold wurzel (which they invariably call "beet root," never using the Swedish term) is common enough in their fields; but no attempts are made to cultivate Dutch or Swedish turnips. The universal reply so inquiries on this subject is, that there is not sufficient humidity in the climate to favor its growth; the root never reaching the due proportions. Hence the lean mutton—the wretchedly bad mutton of France—and the equally disagreeable, disreputable beef, which is larded with bacon (!) for want of a healthy proportion of fat. Besides all this, the absence of turnip, the mother of the dung heap, which is the mother of everything else, leaves the farms destitute of compost. I suggested oil-cake, but the answer was "Nobody likes fat meat in our country: why should we waste our money on candle grease?" I question their theory of deficient humidity; but I have heard this alleged both in Germany and in France as the cause of the gardeners, even at the Royal Palaces, never being able to make a smooth and verdant *lawn*, such as we

maintain everywhere and anywhere in our own beautiful England. The grass dries up, and grows rank and coarse as the fibres of a door-mat. The boasted Tapis Vert (green carpet) sloping from the Palatial terrace at Versailles, is but a wiry, dry field of bad grass. The lawns at Schœnbrunn and Potsdam are both superior to it. The Duke of Nassau has certainly succeeded admirably in his lawn at Biberich; but, independently of close proximity to the "abounding river," he employs the most expensive artificial irrigation.—*Musgrave's By-Roads and Battle Fields in Picardy.*

The Preservation of Corn.—A joint-stock company has been formed in Paris for the preservation of wheat and other descriptions of grain, under the direction M. Dayere, a professor at the School of Arts and Manufactures. The system of preserving corn is founded on the principle that it is the excess of water contained in wheat which is the principal cause of the fermentation and of the production of insects which destroy the grain Consequently, by placing in pits wheat sufficiently dry, that is containing less than 16 per cent of water, one is certain to preserve it without any loss of weight or alteration to the quality. The War Department, which feeds 500, 000 men, and which, according to the existing regulations, must always have a large supply of corn on hand, has studied M. Dayere's system since the year 1856, both in France and Algeria, under the direction of commisioners appointed especially on account of their knowledge of the subject. The results obtained are highly satisfactory; 576 quintals of wheat were divided into two portions, and one of them placed in the pits at Asniers, near Paris, on the 30th of April 1856, and the other on the 22d of May of the same year. The corn remained there for 25 months without being stirred. The specific weight of the first portion on being placed in the pits was 76 kilogrammes 60 the hectolitre, and when withdrawn it was 76 kilogrammes 39. The second portion weighed 78 kilogrammes 80 the hectolitre on being deposited in the pits, 78 77 when removed. The quantity was576 quintals when deposited in the pits, and 575 quintals 93 when withdrawn, showing an insignificant loss of weight of only 7 kilogrammes. When the wheat was withdrawn it was not only in as good condition as when deposited but the color was better.

Fowler's Steam Plough in the West Indies.—A trial of Fowler's steam-plough took place in a cane field on Plantation Houston to day; a large number of gentlemen were present, among whom we observed the Governor, the Hon. J. L. Smith, &c., &c. The trial to-day was maed with one of Fowler's balancing ploughs. The apparatus consisted of the plough, which was so constructed as to move either way without turning; a steam-engine, furnished with a grooved drum, which was placed in a punt, and connected with it was another punt containing a boiler. On the opposite headland was placed another drum or anchor, corresponding with the one attached to the engine. Around these drums was placed an endless rope, which was placed around another drum on the implement, by means of which the endless rope was adjusted. The plough worked backwards and forwards between the two drums. The soil was a stiff loam, and the surface of the beds very irregular, but, notwithstanding this disadvantage, the plough did its work in a very satisfactory manner. We shall reserve our opinion on the merits of this implement, and of its suitability to the purposes of tillage in this colony, until a future opportunity, when it has had a fuller trial. Even if this plough should not fully answer the expectations that have been formed of it, it will enable our practical farmers to adopt some modification of it that will be completely successful. We hail the experiment made to-day as a favorable beginning that will lead to great results.—*Demerara-Colonist of 6th May*, 1861.

Wheat Growing Countries—Average Yield.—A late number of *N. Y. Tribune* contains an interesting article on Wheat Culture, and the product of the leading cereal in different countries. From the figures given it seems that ours is not the greatest wheat producing country' France and Britain exceeding it in average yield. Our last years crop is assumed to be one hundred and eighty million bushels, but the average is probably only one hundred and twenty millions—and, as our system of agriculture is exhausting the best lands, a diminusion of the yield is anticipated. The average yield of other countries is stated as follows :

France,	191,422,248
Britain,	145,300,000
Two Sicilies,	64,000,000
Canada,	60,470,131
Spain,	46,914,800
Austria,	27,735,568
Sardinia,	19,975,000
Russia, ex. only,	18,921,776
Belgium,	13,350,000
Portugal,	5,500,000
Turkey, ex only,	4,629,000
Holland,	3,000,000
Denmark,	3,000,000
Sweden and Norway,	1,200,000

"Here is an annual production of over six hundred and six million bushels. If the crops of this continent are included, the total may be safely assumed to be two hundred millions, as the unascertained product of Russia and Turkey must be very large. No better evidence of the primary value of the wheat plant to the human family could be given than such an exhibition as this It proves that where the highest civilization has been attained, there the greatest production is realized."—*Rural New Yorker.*

Army Worm—Extent of its Ravages.

Frighrful indeed are becoming the ravages of this insect pest amongst the growing crops of Illinois. The cool weather of the past month has been favorable to their multiplication and growth, and they are now sweeping with all the destructiveness of a prairie fire some of the fairest and most promising portions of our State. Meadows and pastures, wheat, oat, rye and corn fields, gardens, yards, trees and shrubbery—in fact every green thing is disappearing before them. In many localities it is thought that the wheat crop is so far advanced that the stripping of the leaves alone will not materially injure it. In many instances corn can be replanted and the second crop probably will escape them. But if their ravages could be stopped to-day, the loss already occasioned by them could only be estimated by millions of dollars.

From exchanges and from our own correspondents we learn that their sad work is being prosecuted to a greater or less extent over the following territory. With slight comparative damage in McDonough county, commencing with Adams county in the west, we trace them eastward through Cass, Sangamon, Platt, Champaign and lower part of Vervillion counties. They do not so far as we have heard yet work to any great extent north of this line. South from Adams, down the Mississippi they take Pike, Calhoun, Madison, St. Clair and Jackson—eastward of this line and south from the other their nnmbers seem to be innumerable in Coles, in Clark, Effingham, Cumberland and Christian counties. There are several of the interior counties of Southern Illinois, that we have no reports from, and the same may be said of the extreme south-western portion of the State. We have little doubt. however, though we hope it may not be true, that their destructive presence is being felt in all the State below latitude 40° 20.

On the Missouri side they are reported in Boone, Howard, and Pike counties. The northern portion of Kentucky, and the southern portion of Indiana, are also being overrun with them.

Ditching, dragging logs over them and turning hogs in upon them are the expedients being tried to effect their destruction, but to little purpose. In extreme cases meadows have been burned over to stay their progress, but they are still marching on, spreading desolation in their pathway. It is fortunate they appear so seldom —it is peculiarly unfortunate they are to scourge us this year.—*The Prairie Farmer, June*, 13.

Horticultural.

Toronto Horticultural Society.

The Second Exhibition of the season was held in the Societys' Garden, on the 11th inst. Unfortunately the weather throughout the day was unpropitious, there being a strong, cold wind, and dense clouds, which detracted much from the enjoyment of these beautiful grounds, and diminished greatly the number of visitors.

The flowers and vegetables were arranged in a copious tent, and although the number of entries was considerably shorter than usual, the quality of the productions generally was highly creditable to our cultivators, whether profession or amateur. The state of the weather would tend of course to diminish the amount of the articles sent for exhibition, and we were informed that some unfortunate misunderstanding had prevented three or four of the usually largest contributors on these occasions sending any thing at all. It is earnestly to be hoped that the like will not occur again, but that all who practise and wish well to the beautiful and important art of Horticulture, will rally round a society which has already done much, and if properly supported, will do a vast deal more, in refining the public taste, increasing the comforts, and rendering more attractive the dwellings of the people. The Society's Garden is already a lovely spot, and if supported by the citizens as it deserves, will in a few years favourably compare with similar things in much older countries.

The Hon. S. B. Harrison, as usual, contributed a number of stove and green-house plants,—denoting by their growth and beautiful appearance the attention and skill of the cultivator. A large leaf of the *Victoria Regia* from the same conservatory,—of one years' growth, we understood, attracted much attention. The flowers and vegetables, considering the unfavorable character of the season, were really good, and if the gardeners and amateurs in the vicinity of Toronto had generally contributed only a small portion of the good things which they are known to possess, the extent of the Exhibition would have been commensurate with its high character for quality. Among the contributors obtaining prizes may be mentioned; S. Turner, Gardener to Judge Harrison, Messrs. Fleming and Leslie; J. C. Small, Esq., the indefatigable Secretary; F. W. Coate, Esq., J. Forsyth, of the Normal School Grounds, R. Defries, W. Higgin, Gardener to Hon. G. W. Allan, J. Brown, Gardener to W. H. Boulton, Esq., T. Tilman, Gardener to S. Heward, Esq., J. De-

fries, J. Granger, G. Tattle &c. The Judges of Plants and Flowers were Messrs. J. A. Bruce, J. Gray, and T. Buchanan, of Hamilton; of Fruits and Vegetables, Messrs. Robert Beard, and B. Defries, of Toronto.

The Pear Blight.

Editor Agriculturist.—Can you give any information on the cultivation of Pear Trees, more especially on the prevention of the blight, &c. I got some trees from a nursery at Toronto, some time ago, and some of my Pear trees are attacked by the blight. As I am but a novice in fruit culture, you will confer a favour on one of your readers if you would give some information on the above subject. A. E.

Hope, July 1861.

[Remarks.—We find the subject of diseases of the Pear treated pretty fully in Downing's "Fruit and Fruit Trees of America," and as the remarks of that distinguished horticulturist will doubtless be interesting to many of our readers who do not possess his book, we here subjoin them.—Eds.]

Dseases. As a drawback to the, otherwise, easy cultivation of this fine fruit, the pear tree is unfortunately liable to a very serious disease, called the *pear tree blight*, or *fire blight*, appearing irregularly, and in all parts of the country; sometimes in succeeding seasons, and, again, only after a lapse of several years; attacking, sometimes, only the extremities of the limbs, and, at other times, destroying the whole tree; producing occasionally, little damage to a few branches, but often, also destroying, in a day or two, an entire large tree; this disease has been, at different times, the terror and dispair of pear growers. Some parts of the country have been nearly free from it, while others have suffered so much as almost to deter persons from extending the cultivation of this fine fruit. For nearly an hundred years, its existence has been remarked in this country, and until very lately, all notions of its character and origin have been so vague, as to lead to little practical assistance in removing or remedying the evil.

Careful observation for years past, and repeated comparison of facts with accurate observers, in various parts of the country, have led us to the following conclusions;

1st, That what is properly called the pear-blight is, in fact, two distinct diseases. 2nd, that one of these is caused by an insect, and the other by sudden freezing and thawing of the sap in unfavourable autumns. The first, we shall therefore call the *insect blight*, and the second, the *frozen-sap blight*.

1. The insect blight. The symptoms of the *insect blight* are as follows: In the month of June or July, when the tree is in full luxuriance or growth, shoots at the extremities of the branches, and often extending down two seasons' growth, are observed suddenly to turn brown. In two or three days the leaves become quite black and dry, and the wood so shrivelled nd hard as to be cut with difficulty with a knife. If the branch is allowed to remain, the disease sometimes extends a short distance further down the stem, but, usually, not much further than the point where the insect had made its lodgment. The insect which causes this blight, was first discovered by the Hon. John Lowell, of Boston, in 1816, and was described by Professor Peck, under the name of *Scolytus pyri*. It is very minute, being scarcely one-tenth of an inch long, and it escapes from the branch almost as soon as, by the withering of the leaves, we are aware of its attack; hence, it is so rarely seen by careless observers. In the perfect state, it is a very small beetle, deep brown, with legs of a paler colour. Its thorax is short, convex, rough in front, and studded with erect bristles. The wing covers are marked with rows of punctured points, between which are also rows of bristles, and they appear cut off very obliquely behind.

This insect deposits its egg some time in July or August, either behind or below a bud. Whether the egg hatches at once, we are not aware, but the following spring the small grub or larva grows through the sap wood or tender alburnum, beginning at the root of the bud, and burrows towards the centre of the stem. Around this centre or pith, it forms a circular passage, sometimes devouring it altogether. By thus perforating, sawing off, or girdling, internally a considerable portion of the vessels which convey the ascending sap, at the very period when the rapid growth of the leaves calls for the largest supply of fluid from the roots, the growth and the vitality of the branch are checked and finally extinguished. The larva about this time, completes both its transformation, and its passage out, and in the beetle form, emerges, with wings, into the air, to seek out new positions for laying its eggs and continuing its species. The small passage where it makes its exit, may now more easily be discovered, below or by the side of the bud, resembling a hole board with a needle or pin.

It is well to remark here that the attack of this blight insect is not confined to the pear, but in some parts of the country we have observed it preying upon the apple and the quince in the same manner. In the latter tree, the shoots that were girdled, were shorter, and at the extremities of the branches only; not leading, therefore, to such serious consequences as in the pear.

The ravages of the *insect blight*, we are inclined to think, do not extend much below the point where the insect has deposited its egg, a material point of difference from the *frozen-sap blight*, which often poisons the system of the

whole tree, if allowed to remain, or if, originally, very extensive.

The remedy for the insect blight is very distinct. It is that originally suggested by Mr. Lowell, which we and many others have pursued with entire success, when the other form of the disease was not also present. This remedy consists, *at the very first indications of the existence of the enemy,* in cutting off and burning the diseased branch, a foot below the lowest mark of discoloration. The insect is usually to be found at the bottom of this blackened point, and it is very important that the branches be removed early, as the *Scolytus* is now about emerging from his burrow, and will speedily escape us, to multiply the mischief elsewhere. If there is much appearance of the insect blight, the tree should be examined every noon, so long as there are any indications of disease, and the amputated branches carried at once to the fire.

II. The frozen sap blight. We give this term to the most formidable phase of this disease that affects the pear tree. Though it is, by ordinary observers, often confounded in its effects with the insect blight, yet it has strongly characteristic marks, and is far more fatal in its effects.

The symptoms of the *frozen sap blight* are the following. First; the appearance, at the season of winter or spring pruning, of a *thick, clammy* sap, of a sticky nature, which exudes from the wounds made by the knife; the ordinary cut showing a clean and smooth surface.

Second; the appearance, in the spring, on the back of the trunk or branches, often a considerable distance from the extremities, of black, shrivelled, dead, patches of bark.

Third; in early summer months, the disease fully manifests itself by the extremities shrivelling, turning black, and decaying, as if suddenly killed. If these diseased parts are cut off, the inner bark and heart-wood will be found dark and discoloured some distance below where it is fresh and green outside. If the tree is slightly affected only, it may pass off with the loss of a few branches, but if it has been seriously tainted, the disease, if not arrested, may, sooner or later, be carried through the whole system of the tree, which will gradually decline, or entirely perish.

To explain the nature of the disease, we must first premise that, in every tree, there are two currents of sap carried on, 1st, the upward current of sap, which rises through the outer wood, (or *alburnum.*) to be digested by the leaves; 2nd, the downward current, which descends through the inner bark, (or *liber,*) forming a deposite of new wood on its passage down.

Now let us suppose, anterior to a blight season, a very sudden and early winter, succeeding a damp and warm autumn. The summer having been dry, the growth of trees was completed early, but this excess of dampness in autumn, forces the trees into a vigorous second growth, which continues late. While the sap vessels are still filled with their fluids, a sharp and sudden freezing takes place, or is, perhaps, repeated several times, followed, in the day time, by bright sun. The descending current of sap becomes thick and clammy, so as to descend with difficulty; it chokes up the sap-vessels, freezes and thaws again, loses its vitality, and becomes dark and discoloured, and, in some cases, so poisonous, as to destroy the leaves of other plants when applied to them. Here, along the inner bark, it lodges, and remains in a thick, sticky state, all winter. If it happens to flow down till it meets with any obstruction, and remains in any considerable quantity, it freezes again beneath the bark, ruptures and destroys the sap-vessels, and the bark and some of the wood beneath it shrivells and dies.

In the ensuing spring, the upward current of sap rises through its ordinary channel—the outer wood or alburnum—the leaves expand, and, for some time, nearly all the upward current being taken up to form leaves and new shoots, the tree appears flourishing. Toward the beginning of summer, however, the leaves commence sending the downward current of sap to increase the woody matter of the stem. This current, it will be remembered, has to pass downward, through the inner bark, or *liber,* along which, still remain portions of the poisonous sap, arrested in its course the previous autumn. This poison is diluted and taken up, by the new downward current, distributed toward the pith, and along the new layers of alburnum, thus tainting all the neighboring parts. Should any of the adjacent sap-vessels have been ruptured by frost, so that the poison thus becomes mixed with the still ascending current of sap, the branch above it immediately turns black and dies, precisely as if poison were introduced under the bark. And very frequently it is accompanied with precisely the odour of decaying frost-bitten vegetation.

The foregoing is the worst form of disease, and it takes place when the poisoned sap, stagnated under the bark in spots, remains through the winter in a thick semi-fluid state, so as to be capable of being taken up in the descending current of the next summer. When, on the other hand it collects in sufficient quantity to freeze again, burst the sap vessels, and afterwards dry out by the influence of the sun and wind, it leaves the patches of dead bark which we have already described. As part of the woody channels which convey the ascending sap probably remain entire and uninjured, the tree or branch will perhaps continue to grow the whole season and bear fruit, as if nothing had happened to it, drying down to the shrivelled spot of bark the next spring. The effect, in this case, is precisely that of girdling only, and the branch or tree will die after a time, but not suddenly.

From what we have said, it is easy to infer that it would not be difficult on the occurrence of such an autumn—when sudden congelation takes place in unripened wood—to predict a

blight season for the following summer. Such has several times been done, and its fulfillment may be looked for with certainty, in all trees that had not previously ripened their wood.

So, also, it would, and does naturally follow that trees in a damp, rich soil, are much more liable to the frozen sap blight than those upon a dryer soil. In a soil over moist or too rich, the pear is liable to make late second growth, and its wood will often be caught unripened by an early winter. For this reason this form of blight is vastly more extensive and destructive in the deep, rich soils of the western states, than in the dryer and poorer soils of the east. And this will always be the case in over rich soils, unless the trees are planted on raised hillocks, or their luxuriance checked by root-pruning.

Again, those varieties of the pear, which have the habit of maturing their wood early, are very rarely affected with the frozen sap-blight. But late growing sorts are always more or less liable to it, especially when the trees are young, and the excessive growth is not reduced by fruit-bearing. Every nurseryman knows that there are certain late growing sorts which are always more liable to this blight in the nursery. Among these we have particularly noticed the Passe Colmar and the Forelle, though when these sorts become bearing trees, they are not more liable than many others. The Seckel pear is celebrated for its general freedom from blight, which we attribute entirely to its habit of making short jointed shoots, and ripening its wood very early.

To distinguish the blight of the frozen sap from that caused by the *Scylotus pyri*, is not difficult. The effects of the latter cease below the spot where the insect has perforated and eaten its burrow in the branch. The former spreads gradually down the branch, which, when dissected, shows the marks of the poison in the discoloration of the inner bark and the pith, extending down some distance below the external marks of injury. If the poison becomes largely diffused in the tree it will sometimes die outright in a day or two; but if it is only slightly present it will often entirely recover. The presence of black, dry, shrivelled spots of bark on the branches, or soft sappy spots, as well as the appearance of thick clammy sap in winter or spring pruning, are the infallible signs of the frozen sap blight.

The most successful remedies for this disastrous blight, it is very evident are chiefly preventive ones. It is, of course, impossible for us to avoid the occasional occurrences of rainy, warm autumns, which have a tendency to urge the trees into late second growth. The principal means of escaping the danger really lies in always studiously avoiding a damp soil for the fruit trees. Very level or hollow surfaces, where heavy autumnal rains are apt to lie and saturate the ground, should also be shunned. And any top dressing or enriching, calculated to stimulate the tree into late growth, is pernicious. A rich, dry soil, is, on the whole, the best, because there the tree will make a good growth in time to ripen fully its wood, and will not be likely to make second growth. A rich moist soil, will, on the contrary, serve continually to stimulate the tree to second growth. It is in accordance with this that many persons have remarked, that those pear trees growing in common meadow land, were free from blight in seasons when those in the rich garden soils were continually suffering from it.

The first point then should be to secure a rich but dry, well drained soil. Cold aspects and soils should be avoided, as likely to retard the growth and ripening of the wood.

The second is to reject, in blighted districts, such varieties as have the habit of making the wood late, and choosing rather, those of early habit, which ripen the wood fully before autumn.

Severe summer pruning, should it be followed by an early winter, is likely to induce blight, and should therefore be avoided. Indeed, we think the pear should always be pruned in winter or early spring.

As a remedy for blight actually existing in a tree, we know of no other but that of freely cutting out the diseased branches, at the earliest moment after it appears. The amputation should be continued as far down as the least sign of discoloration, and consequent poisoning is perceptible, and it should not be neglected a single day after it manifests itself. A still better remedy, when we are led to suspect, during the winter, that it is likely to break out during the summer, is that of carefully looking over the trees before the buds swell, and cutting out all branches that show the discolored or soft sappy spots of bark that are the first symptoms of the disease.

Finally, as a preventive, when it is evident, from the nature of the season and soil, that a late autumnal growth will take place, we recommend laying bare the roots of the trees for two or three weeks. Root pruning will always check any tendency to over-luxuriance in particular sorts, or in young bearing trees, and is therefore a valuable assistance when the disease is feared. And the use of lime in strong soils, as a fertilizer, instead of manure, is worthy of extensive trial, because lime has a tendency to throw all fruit trees into the production of short-spurs, instead of the luxuriant woody shoots induced by animal manure.

In gardens, where, from the natural dampness of the soil or locality, it is nearly impossible to escape blight, we recommend that mode of dwarfing the growth of the trees—conical standards, or *quenouilles*, described in the section on pruning. This mode can scarcely fail to secure a good crop in any soil or climate where the pear tree will flourish.

After the blight, the other diseases which affect the pear tree are of little moment. They are chiefly the same as those to which the apple is liable, the same insects occasionally affecting both trees, and we therefore refer our readers to the section on the apple tree.

There is, however, a *slug worm*, which occasionally does great damage on the leaves of the pear tree, which it sometimes entirely destroys. This slug is the *Selandria cerasi* of Harris. It appears on the upper side of the leaves of the

pear tree from the middle of June to the middle of July. It is nearly half an inch long when fully grown, olive-coloured, tapering from the head to the tail, not much unlike in shape a miniature tadpole. The best destructive for this insect is Mr. Haggerston's mixture of whale oil soap and water, thoroughly showered or sprinkled over the leaves. In the absence of this we have found ashes or quicklime, sifted or sprinkled over the leaves, early in the morning, to have an excellent effect in ridding the trees of this vigilant enemy.

The Curculio.

A late number of the Horticulturist contains a communication from an old and well known cultivator of Cincinnati, reviewing and criticising the different modes which have been adopted for destroying or eluding this troublesome insect. He says, "some shake the trees. I believe this would be a safe remedy if they would begin at daylight, and shake the trees till night, not even leaving the trees to eat their meals." We entirely agree with him. Where the insects are not abundant, a less frequent or continued shaking might answer. But this "*shaking*" must not be confounded with the greatly superior process of *jarring* the insects on sheets and *destroying* them. Many have merely tried the first remedy occasionally, and from its failure have denounced the latter, supposing them to be nearly identical. There is scarcely any resemblance between them. Shaking repels or drops only a portion of the depredators; many remain fast in the tree. Go to a tree that contains twenty curculios, as is sometimes the case where they have been unmolested; *shake* it, and perhaps one-third, or possibly one-half, will fall; *jar* it with the hand, or strike it with a mallet wound with cloth, to prevent bruising, and perhaps one half of the remainder will; strike it sharply with the back of an axe, and every one will come down. All this we know from experience. (To prevent bruising, a limb should be sawed near the body of the tree, leaving a stump an inch long to receive the blow.) Now it will be observed that there will be enough left after the shaking to puncture all the fruit, or even after the soft jarring, which is sufficient reason why these modes have failed, or but partially succeeded. The daily or twice daily jarring must be continued for several weeks, in order to kill the new comers which daily appear. By intermitting two or three days the fruit may be all stung, which is another cause of failure. It is not necessary to cite the many instances we have witnessed where the jarring and killing process has prove completely effectual. Shaking alone, without killing, which appears to be the mode alluded to by the correspondent of the Horticulturist, can accomplish but little, unless constantly repeated, as the insects will soon find their way back to the trees.

The next mode which this correspondent alludes to, is the use of "various washes and fumigations of horrible odors," and "offensive manures under the trees." He thinks these might succeed, but adds, "I should not wish to live in the house, nor make the family a minute's visit," where these odors filled the air. "If they would not meet the approval of the curculio, they would not meet mine."

He recommends planting trees so as to hang over water; but this would be inconvenient, and often impossible, and the editor remarks that it has repeatedly failed.

He especially recommends paving under the tree. This would prevent a future crop being destroyed, as the larvæ could not escape into the earth, and must consequently perish on the hard surface. It will not kill the insects of this year, nor cure the fruit already stung, and is precisely similar in its *results* to the pig-and-poultry remedy, and to Ellwanger & Barry's mode of beating the earth smooth and sweeping up daily the fallen infested fruit—all three destroy this year's worms, and save next year's supply. The jarring and killing method, saves the crop of this year, and has therefore by one year, the start of the other three. These four remedies are the only ones of any value. The pig-and-poultry, and the jarring process combined, constitute the most efficeint cure for the evil."—*Country Gentleman.*

The Dairy.

Cheese-Making in Switzerland.

The manner in which the Swiss peasants combine to carry on cheese-making by their united efforts deserves to be noted. Each parish in Switzerland hires a man, generally from the district of Gruyéré, in the Canton of Freyburgh, to take care of the herd and make the cheese; one cheeseman, one pressman, or assistant, and one cow-herd are considered necessary for every forty cows. The owners of the cows get credit each of them in a book daily for the quantity of milk given by each cow. The cheeseman and his assistants milk the cows, put the milk altogether and make cheese of it, and at the end of the season each owner receives the weight of cheese proportionable to the quantity of milk his cows have delivered. By this co-operative plan, instead of the small-sized, unmarketable cheeses only, which each could produce out of his three or four cows' milk, he has the same weight in large, marketable cheeses, superior in quality, because made by people who attend to no other business. The cheeseman and his assistants are paid so much per head of the cows in money or cheese. A similar system exists in the French Jura.—*Notes of a Traveller.*

The Apiary.

Swarming of Bees.

An unusual occurrence took place on Sunday last at the Camp on the Curragh of Kildare. A private of the 20th Regiment took a can and a piece of iron, with which he commenced beating the can for the purpose of causing some bees flying about the camp to swarm. Shortly after he commenced the noise, the bees gathered upon one side of his face, extending in a thick cluster from the top of his head to half down his arm, between his shoulder and elbow. He called out for assistance, and was placed in a chair, when a hive was obtained, which was held over his head, covered with a sheet, with a view of endeavoring to get the bees to enter the hive, but up to the hour of three o'clock, when our correspondent saw him, there was little prospect of their removing, and, the day being extremely hot, it was conjectured they would not take to the quarters which were provided for them sooner than six or seven o'clock in the evening The soldier was removed to the guard-room, out of the air, for the purpose of preventing any other assailants gathering about him, and to give him shelter from the overpowering rays of the sun, from which he was suffering greatly in consequence of the state to which the sudden and dangerous assemblage upon him had reduced him.

The above paragraph, which we extract from *Freeman's Journal*, is an amusing illustration of the prevalent ignorance of bee-management. We are told that the noise of the can was produced for the purpose of causing the bees to swarm; instead of which it was doubtless for its supposed efficacy in causing the swarm to settle. The circumstance of the bees settling on the man's face was doubtless owing to the fact that the queen, perhaps heavy with eggs, or possibly injured in her wings, had alighted on him as the nearest prominent object. The mode of proceeding was erroneous in the extreme: by covering the swarm over with a sheet the bees were rendered quiet, and, being shaded, were indisposed to move. Had the side of the hive been held against the man's face so that the edge just touched the cluster of bees, and had the lower part of the swarm been sprinkled with water, the bees would have ascended rapidly into the hive; or had any bee-master been present he might have separated the clustered bees with his hands, secured the queen, and placed her in the hive, when the bees would speedily have followed. As to the danger of the occurrence, there was positively none. Bees, unless injured, never sting at the time of swarming, so that the possibility of other "assailants" attacking the soldier existed only in the fertile imagination or the narrator.—Ed. *of the Field, London.*

Half the failures of life arise from pulling in one's horse as he is leaping

Veterinary.

On the Roman Bath as applicable to Training Race-Horses.

The most wonderful discoveries have lately taken place in every branch of science, and the most extraordinary inventions and improvements in every item connected with the luxuries and the comforts of mankind: general education has civilized and enlightened the great working classes. The islands are looking up: even our domestic animals have improved in quality, and twenty per cent. in point of size, from poultry and pigs to sheep, cattle and horses, owing to care and attention in breeding during the last century; and nothing has retrograded but seamanship, emasculated by the introduction of steam: sailors are numerous, but seamen are scarce. Lloyd's list of wrecks proves the melancholy fact; but there is one profession on an humble scale which has made no progress, no improvement for one hundred and fifty years—I mean the training of race-horses; and, at the same time, I must add my testimony that a more respectable or a better class of tradesmen do not exist than the majority of English trainers, who, from being in constant communication with gentlemen, imbibe liberal ideas, and prove themselves worthy of the highest trust and responsibility.

Thanks to Mr. Urquhart (to whom this country is more indebted than to any living man) for the introduction of Turkish *alias* Roman baths: a new era has arisen, the present barbarous system of preparing horses to race by drastic purgatives, hot clothing, hot stables, and four and five miles sweats will be ameliorated, and we may look forward with confidence to a revolution, by the aid of hot-air baths, which will enable a trainer to bring his horses to the post in first-rate condition, without subjecting them to a destructive apprenticeship.

There was always a difficult problem to be solved. How is a trainer to prepare a horse to race? *alias* to get his inside clean and his muscles in full vigour, without the assistance of strong purgatives, and galloping long distances under a weight of heavy woollen clothing. I do not deny the necessity of giving horses the strongest exercise, wisely adapted to their age and condition. It is proved that you can lighten a horse's frame as well by the operation of a hot air bath as by a four-mile sweat; and the question arises—which is the best practice to get them into condition? My belief is, that a smart two-mile or three mile gallop, with the horse stripped, carrying a light weight, and a hot-air bath afterwards, is more beneficial to a horse's lungs, and, no doubt, to his legs and sinews, than a four-mile gallop under heavy clothes.—Try it on a jockey; let him take his usual walk

of nine miles under sweaters; and the next time walk half the distance, and then a hot-air bath; I fancy he will find himself a lighter, a stronger, and a wiser man after the second process. Owing to the exhaustion of a four or five-mile sweat a horse is only fit to walk the following day; and many horses are annually disabled by this severity; but after a hot-air bath a horse is fit and ready for any task. I therefore pronounce the hot-air bath a most powerful and valuable auxiliary. With this assistance you may bring an infirm horse to the post which would break down in two orthodox four-mile sweats. With respect to the sound horses, why should we not try to keep them sound?—is not prevention better than cure?

The Roman bath invigorates a horse's frame, gives increased action to his liver, improves his appetite, cleanses the pores of suppressed perspiration, and fortifies the skin from extreme heat and cold; the joints become more supple, the sinews more elastic, and the heart, lungs, and kidneys being freed from fat, horses are able to take the strongest exercise without suffering from internal fever. Rheumatism, sore shins, and cutaneous eruptions are speedily subdued by hot air. Under this system, no horse ought to be exercised in heavy clothes. In my opinion it is always objectionable to give a horse a sharp or a very long gallop when he is clothed; and looking to hot air as an agent, we may keep our horses sound for thrice the estimated period of their present efficacy; the veterinary surgeon and the saddler will send in diminished bills;—this will balance the expenses of the bath, and will save large sums of money to the proprietors of race-horses.

Of all animals in the world there are none better endowed by nature to endure the vicissitudes of climate than a horse. From the burning deserts of Arabia to the coldest regions of Europe, Asia, and America, they enjoy the most perfect health and vigour. Why are we, then, to treat them in this temperate clime like exotic plants? If, from the day a foal is dropped, he is never shut up with his dam in a close hovel, except during a severe frost; if the same practice be adopted after he is weaned till he is taken into the stable to receive his education, there is very little risk of his catching cold, cough, or any disease; all those indispositions arising from young stock being confined in a close, unwholesome box, and then being suddenly exposed to cold winds.

When the yearling colt is removed to a well-built, warm stable, you would suppose that, if he enjoyed perfect health during his days of liberty, in the open air, rolling on the wet grass—if this mode of life agreed with him, and added daily to his growth and strength, that, as far as fresh air was concerned, you would allow him all the advantages which nature can bestow. From a life of freedom, housed in an open box, inhaling pure, fresh air, he is confined with his head tied up to a manger in a close stable, the windows jealously opened by day, as if the air was injurious to his health, and carefully shut, on an average of thirteen hours during the greatest part of the year. As a foal he roughed it in the paddock during the cold winds of February: eighteen months afterwards he is clothed and shut up in a warm, close room. Before the colt is reconciled to his first lessons of servitude, a woollen rug is strapped round him, to add to the naturally inflamed state of his blood; and to crown his misfortunes, from having always had free access to water, the trainer restricts him to two draughts per diem; it signifies nothing whether the weather is hot or cold, the stable regulations, like the laws of the Persians, are inviolable. The trainer drinks ten times a-day if his throat is dry, but he never calculates that his horses may be more thirsty than usual if the thermometer in his fusty stable rises to 90 deg. It has been proved over and over again that, if horses in a stable have free access to water, they will not drink as great a quantity as when water is offered to them twice a day (excepting in sultry weather); because the horses, having more sense than their masters, drink a whole pailful, to lay in a stock to meet the exigencies of feverish thirst, and the interior demands which nature may require in the long interval of destitution. This saves trouble, but it is in direct antagonism to the principle of training men to run or to fight, who are never allowed to take a large draught.

Thus the raw material, in the shape of a healthy, well-grown colt, eighteen or nineteen months old, is introduced to the care and tender mercies of thegroom. After the usual process of leading him about, lunging him, backing him, his proud spirit bends to the yoke; from gentle exercise he is abruptly called upon to mend his paces, and within fourteen weeks he is tried with older horses, from six hundred yards to half-a-mile. A trainer may justly complain and object to these early preparations. He generally quietly acquiesces, owing to a natural curiosity to find out a trump, or to be enabled to select the wheat from the chaff. As far as these early trials are concerned, the experiment can now be made at half the risk of destroying the colt, or, in other words laying the seed of future unsoundness, by using the hot-air bath for absorbing his internal fat and superfluous flesh, without having recourse to strong medicine or long preparatory gallops.

At two years old the trainer considers it necessary to clothe the unfortunate colt more warmly, on the principle that he becomes more tender as he advances in age (a novel doctrine); and he is not satisfied until he makes the horse uncomfortable by a flannel or a woollen hood when he goes out to exercise. A showman thinks it right to dress up his dancing dogs or his monkey at a fair—that is quite admissable; but a hood makes a horse susceptible of cold—it is laying a

trap for a sore throat. A hood is excusable in a railroad van; for all other purposes it is only good for trade. Ask a trainer why he uses it: you will receive an unmeaning answer.

If their predecessors quarrelled with fresh air, and stopped up the keyholes for the pure love of ammonia, which propagated the disease of roaring, and made a great many horses blind, there was one redeeming point,—they took out their horses twice a day to exercise, for eight months in the year, which gave two opportunities for reventilating a putrid stable. This practice was in vogue for many years after I went to Newmarket, aud highly approved; it is now changed, because it disturbs the domestic felicity of the trainer.

You would imagine that during the height of summer the horses would be out at daybreak, when the dew makes the grass pleasant to their feet, and that the work would be over, and the stables made up, and horses fed by seven o'clock. Not at all; instead of exercising their horses in the cool of the morning, and taking them out a second time at 6.30 p.m. to walk them for an hour, when the stables might be thoroughly cooled, the trainers consider it a more judicious plan to commence work at 7 in the morning, and to keep the horses out till ten o'clock, frequently the hottest time in the day, before the breeze springs up. By this policy they evade the trouble of saddling their horses a second time.

When oxygen is a scarce article in the stable, and ammonia gets the ascendancy, horses suffer from lassitude, loss of appetite, and a dull coat significant of disease. This is expected, as a matter of course, and parried with calomel and aloes.

When a horse's coat breaks in October, and race-horses are deeply engaged, a cough is heard, and coughing runs like wildfire through the stable. What is this owing to? The stable temperature charged with ammonia, the warm clothes, flannel bandages, hoods, and deleterious physic have won the battle; every horse's skin impregnated with suppressed perspiration was susceptible of disease, and they have caught what the trainers haveso studiously engendered. I have known more horses coughing in a stable at Newmarket than in all the cabs from Hyde Park Corner to Somerset House, simply because the cab-horses stand for fourteen hours in the open air, and race-horses are shut up for twenty one hours in a hot stable. The laws of nature cannot be defied with impunity.

(*To be continued.*)

Bone Spavin.

Our readers are constantly asking us to prescribe treatment for the cure of bone spavin; and all, from the tenor of their communications, seem to imagine that this disease can, when placed under the operation of remedial measures, be removed. Bone spavin, as we have previously described, is brought on by sprain, which centres its injurious influence in the hock joint, between the two plate bones, viz.: the scaphoid and cuneiform, Their natural motion being to rotate one over the other, the bones become inflamed, blood is determined to the part where nature, in her efforts to cure, throws out a bony tumor, which fixes together the two bones above mentioned, thus constituting the disease commonly bone spavin.

Treatment.—We know of no treatment which is able to remove a bony tumor from the hock. Its removal may be partially, but not completely effected; consequently, all the remedial means resorted to can only modify the extent of the malady.

1st. Firing has been resorted to in many cases with success; but as far as our experience goes, we consider that the long rest necessary to be allowed after firing exerts a curative influence, which remedies the disease quite independent of the operation.

2d. Blistering is liked by most horsemen as a remedy for spavin, and doubtless it is to be preferred to firing, as it leaves no blemish; whilst the latter does. When an animal is selected that a blister may be applied for the cure of lameness caused by the presence of spavin, the hair over the seat of the disease should be clipped closely off, when the denuded part must be bathed well with hot water, after which it must be wiped dry and rubbed until the friction used has drawn the blood to the surface. The blister, consisting of the biniodide of mercury or cantharides, is now to be rubbed over the skin on the inside of the hock; after which operations the animal is said to be blistered.

The application of a blister, only once, is insufficient in most cases to remedy spavin; three or four blisterings, at intervals of a month, being generally required.

Setons.—the introduction of a seaton over the seat of spavin is good treatment, and has been adopted with marked succes by the writer. The mode by which this operation can be performed with the greatest facility is as follows: First. The skin, about an inch and a half above the spavin, should be grasped betwen the finger and thumb, and cut through with a pair of scissors made for this purpose. Second. The seton-needle, with a piece of tape attached to it, should be inserted into the cut surface, and passed over the spavin to about an inch below it, and at the place where the needle points and incision must be made through the skin; the tape is now brought over the spavin, is knotted at each end, and the operation is completed.

Subcutaneous Operations.—It is the practice of some veterinarians to make an incision on the inside of the hock below the seat of spavin, and insert into the aperture thus made, a plug of tow saturated with turpentine or some

liquid caustic. This operation is by no means novel, as the old farriers similarly operated years ago, and in our opinions is a practice much to be deprecated, since it produces in all cases, severe inflammation, and in some, extensive sloughing.

The division of the posterior tibial nerve—that one situated midway between the leg-bone (tibia) and point of the hock (os calcis)—of course removes all sensation below the part operated upon, and consequently, as far as external observation goes, cures spavin; but although the sensation is removed, the vital action still remains intact, and any injury may occur to the foot of this neurotomised leg without the subject of it manifesting its existence, and yet all the baneful workings of inflammation may be set up, and in a short time the hoof horn will, as it often has, slough off.

The treatment we are wont to prescribe is, during the early period of spavin to introduce a seton, and to allow it to remain in for five weeks, and afterwards blister twice, and at an interval of three weeks between each application. These remedial means have succeeded in many instances, and therefore are recommended to the readers of The Field.—*The Field, London.*

Examination for Soundness.

"Will you warrant him sound?" is one of the first and most important questions we ask regarding the horse we are about to purchase.—And a puzzling and difficult question it often is to the conscientious seller; for there are few horses which have been at full work for a year or two that, in the strict acceptation of the term, are really sound. They may be competent for the duties required of them, useful, lasting, and most valuable, but, nevertheless, they very commonly have some screw loose, some defect, some disease, something which the well-skilled and educated practitioner detects as a departure from health, and accordingly pronounces as unsoundness. It may be serious or slight, of long-standing or of yesterday, permanent or temporary. In some fortunate instances it is so trifling that rest and judicious treatment may speedily remove it. Such are slight corns, caused by bad shoeing, lameness from a prick, thrushes from careless management of the feet, or simple thrombus from bleeding. These being deviations from natural structure, or from health, constitute for the time unsoundness, just as much as incurable spavin or broken wind. The sensible veterinarian consulted, however, respecting such cases, whilst stating the existence of the particular form of unsoundness, is also justified in explaining to his clients the temporary and curable nature of the unsoundness. This is to the advantage of both buyer and seller.

With some people a veterinary opinion is regarded in a very extended point of view, and innocently considered as a sort of general guarantee that the animal is all that is represented, and equal to all that is expected of it. This is out of the question; the purchaser must obviously exercise his own judgment as to the general suitability of the animal, must determine for himself the all-important points of style, action, colour, and the like. To the veterinarian it only belongs to declare whether, to the best of his judgment, the projected purchase is sound. To decide this question aright is sometimes, however, extremely difficult, and the wonder is that the mistakes, which occasionally occur, of wrongly rejecting sound, and erroneously passing unsound horses, are not greatly more common.—In the stir and bustle of a fair, there is brought before the busy veterinarian horse after horse, none of them, in all probability, having ever been seen by him before. Time is precious; sellers press for a favourable verdict, using often many expedients—innocent and the reverse—to show off their animals to the best advantage, whilst purchasers expect the veterinarian to protect them from imposition and secure them a sound beast. Circumstances such as these call forth the best skill, adroitness, and knowledge of the veterinarian. Assuredly, here he had need of Argus's hundred eyes, of skill, education, and experience, and withal of imperturbable coolness and readiness. Amongst a certain class of dealers he is regarded as fair game, and every dodge, artifice, and device is occasionally evoked for his deception. Woe to the inexperienced, unpractical sprig of a veterinary who falls in with some of the Yorkshire or Irish dealers! Unless to his competent theoretical education he adds a sound practical knowledge, with some nerve and sharpness, the chances are that he is cajoled or dragooned into placing his name, with the usual appended flourish of professional capitals, to a certificate which enables an unsound horse to be profitably passed on.

The author of the excellent and entertaining article on "horse-keeping and horse-dealing," in the May number of *Cornhill*, very properly advises that, before closing the bargain, the horse should be examined by a competent and experienced veterinarian. This is most essential with the lighter breeds, and especially if purchased from strangers, or those on whose opinion or word implicit reliance cannot be securely placed. Farmers purchasing horses for agricultural purposes frequently dispense with the professional opinion, and take from the seller a warranty, either in writing, or distinctly expressed in presence of witnesses. In examining horses it is best and most convenient to pur ue a regular and methodical plan. Having the horse brought up to you, examine first his mouth, to satisfy yourself as to age. Notice that the eyes be clear, and that the iris contracts and expands according to the amount of light. Passing the hand under the lower jaw, assure yourself that there are no lumps or swellings, indicative of bastard strangles or other grandular

complaints. As the hand is thence passed down the neck, ascertain that the jugular veins are both entire. Occasionally we have seen horses with the vein on one side perfectly obliterated. Inflammation following blood-letting is the common cause. There is seldom any permanent inconvenience, for the other vessels on the same side soon become enlarged, the circulation is thus duly carried on, and the only untoward effect is swelling of the head when the animal is grazed. See that the shoulders be equally prominent; for in young farm-horses the muscles of the shoulder-blade are occasionally strained, and become in consequence wasted. By hand and eye ascertain that the knees are well formed and free from blemishes. The front surface should be broad and the prominence which projects backwards distinct and large, affording sufficient room and attachment for the well-developed tendons which pass up the limb. The skin should move freely over the front surfaces of the knee, and be free from all scars and marks.—These and any other indications of the animals having been down must be viewed with great suspicion, especially in the case of tottering shaky limbs. The plausible excuse of injuries from rubbing the manger and other such ingenious explanations must be taken for what they are worth.—*North British Agriculturist.*

Transactions.

Abstract of Reports of Agricultural Societies received in the year 1860.

(*Continued from page* 414.)

NORTH YORK.

County Society.—One hundred and seven members; amount of subscriptions, $110; deposited by township branches, $554 20; government grant, $479 98; receipts at fall show, $43; total received, $1187 09. Paid township branches, $644 70; paid balance due treasurer from previous account, $48; paid premiums, $376; expenses, $51 82; balance in treasurer's hands, $66 57. The Directors say in their Report:—

"It is gratifying to know that great improvements have taken place within a few years in agricultural operations within this Riding. A commendable spirit of enterprise and emulation seems to have taken hold of our leading agriculturists, which shows itself in the use of the most approved farm implements—in the neatness and thoroughness of cultivation—the more careful selection of seeds, and, to some extent, in the introduction of better farm Stock, both in cattle and sheep. These improvements, and this enterprise and emulation, your Directors flatter themselves are mainly attributable to the existence of agricultural societies. Your Board is of opinion that further improvements must be made before the productive qualities of our soil are fully developed; and they would recommend a thorough system of under drainage, believing that the most gratifying results would follow the adoption of that system, upon a great portion of our farm land in this country."

TOWNSHIP BRANCHES.

East Gwillimbury.—One hundred and forty-eight members; amount of subscriptions, $151; balance from previous year, $44.32; government grant, $64.50; total received, $259.82. Paid in premiums, $165; expenses, $25.77; balance in treasurer's hands, $69.05.

King.—Two hundred and seventy-five members; amount of subscriptions, $275; balance from previous year, $99.78; share of grant, $130; entries, $16; total received, $520.78. Paid in premiums at shows and ploughing match, $368.50; expenses, $28.95; balance in treasurer's hands, $123.33.

Whitchurch.—Amount of subscriptions, $106; balance from previous year, $22.55; total received, $128.55. Deposited with County Society, $102; paid premiums due from previous year, expenses, &c., $24.40; balance in hand, $2.15. This society merged its funds with those of the County Society for the year, for the purposes of a joint exhibition.

EAST YORK.

County Society.—Seventy-eight members; subscriptions, $133; balance in hand from previous year, $190.30; deposited by Township Branches, $280; receipts at Fall Show, &c, $141.16; Government grant, $479.98; total received, $1224.44. Paid Paid Township Branches, $235; paid premiums, at ploughing match and shows, $654; expenses, $71,02; balance in Treasurer's hands, $264.42. The ploughing match and shows were held in conjunction with the Scarboro' Branch Society, which merged its funds for the year with those of the County Society.

TOWNSHIP BRANCHES.

Markham.—Two hundred and nine members; amount of subscriptions, $257; balance from from previous account, $209.46;

entries at ploughing match, $54; total received, $520.46. Paid in premiums, $340.25; expenses, $79.84; balance in Treasurer's hands, $100.37.

SCARBORO.—One hundred and eight members; amount of subscriptions, $158; balance from previous account, $32.12; received from County Society as net proceeds of joint ploughing match and show, $95; total receipts, $285.12. Paid County Society, appropriation towards ploughing match $40; deposited with County Society, $140; expenses; $6; balance in Treasurer's hands, $99.12. The Society did not draw its deposit, or share of the public grant, from the funds of the County Society, but left the whole as its contribution to the joint ploughing match and fall show.

WEST YORK.

COUNTY SOCIETY.—One hundred and fifteen members; amount of subscriptions, $125; deposited by Township Branches, $580; grant from County Council, $80; Government grant, $479.98; donation for special prizes, $20; entry fees, $5.75; proceeds of exhibition held in conjunction with Toronto Electoral Division Society, $107.84; total receipts, $1398.57. Paid Township Branches, $868; paid premiums, $472.50; expenses, $57.99; balance in hand, 8 cents.

Extracts from Report.

"The tract of country composing this electoral division, although not containing more than about 200 square miles of land, consists of nearly every variety of soil, from a light sand to rich alluvial deposit and stiff clay. There is no rocky land, properly so called; but there is some of a gravelly nature, and some liberally strewn with drift boulders. The greater part is of level formation; but some portions, particularly in the vicinity of the River Humber, are more or less abrupt and hilly. Probably the greater extent may be described as of a loamy character of soil, and nearly the whole may be considered available for profitable farming purposes. Land in the immediate vicinity, or within the limits of the corporation of the City of Toronto, at present used merely for farming purposes, does not bear the high speculative value as available for building or villa lots which it did two or three years ago, but may be still estimated as worth from $200 to $2000 per acre. Outside of these limits, that is to say from 3 to 25 miles distant from the limits of the city, land which is not at present applicable, and has no prospect in future of being applicable to any other than purely farming purposes,—unless in particular situations to market gardening,—may be stated as worth from $50 to $200, according to quality and situation, or leaving out of view the most favored localities, from $50 to $100 per acre.

The general method of cultivation or rotation followed is not yet of a very advanced kind. It varies considerably, but as nearly as it can be described in a few words may be said to consist of a naked fallow, with more or less manuring, sown with fall wheat, then barley or other spring grain, with grass seeds, then meadow or pasture for two years, and then fallow again, as before. Root or other fallow crops, except in a few cases, unless peas may be included in this class, are not yet cultivated in sufficient quantity to be taken into consideration in the general rotation.

Uunder such a system of cultivation, with greater or less variations according to circumstances, the crops obtained during the past year may be roughly estimated as follows:—

FALL WHEAT.—Notwithstanding the extraordinary frost which occurred in June, and which damaged the crop more or less, and the depredations of the midge, the yield was from 12 bushels in the poorest fields to 40 bushels in the best, per acre. The average, say fully 20 bushels.

SPRING WHEAT.—Better than fall; say 25 bushels per acre.

BARLEY.—Some crops were harvested over 50 bushels per acre; average believed to be over 30.

OATS.—Were cut off to a considerable extentent by grasshoppers, but the sample very fine. Average believed to be 35 to 40 bushels, some fields yielding 80 bushels per acre.

RYE—Is very little grown, and the return unimportant.

PEAS.—A very good crop, quite free from the bug. The average from 20 to 25 bshls. per acre.

INDIAN CORN.—But little cultivated, and the season, in consequence of the late frosts, was unfavorable to it. In favorable seasons, 50 bushels of shelled corn per acre would be considered a good crop.

Flax and Hemp.—Very little cultivated. Some good samples, however, were produced.

Hay.—A very poor crop, and much below an average. The failure attributable to late frosts and drought. Some excellent crops, say two tons, were obtained, but the average must be estimated at less than one ton per acre.

Potatos.—A very good crop, and generally speaking of excellent quality, the yield from 100 to 300 bushels per acre; average, say 120. Late dug potatos affected by the rot. The quantity cultivated may be estimated at about from one to two acres per 100 acres of farm land.

Turnips.—The cultivation is generally receiving increased attention, but the quantity grown is yet inconsiderable; may be stated at from none at all to ten acres per farm. The average probably not over an acre to each farm of one hundred acres. In particular cases of high cultivation this year, the crop obtained was from 700 to 900 bushels per acre, the average probably from 400 to 500 bushels.

Mangel Wurzel.—Considerably less cultivated than turnips, but some excellent crops, say 600 to 800 bushels per acre produced last year.

Carrots.—Sown in very small quantites, but produce exceedingly well when properly cultivated.

The breeds of cattle in this riding do not occupy the high position, which might be expected from the wealth and position of the owners of land. There are a few lots of pure bred animals, and many good common cattle and grades; but on the whole the County of York must yield to other portions of the country in this respect.

Dairy farming does not receive that attention which it merits, and neither the quantity or the quality of butter and cheese produced can merit high commendation.

Sheep and pigs, are, generally speaking, of a good class. The Liecester, or crosses of the Liecester sheep, and the small breeds of pigs, being the most in favor. The number of sheep kept is not so large as it might be with advantage, if greater attention were paid to the cultivation of root crops and the growth of wool.

Amongst the important improvements taking place in farming operations, we have pleasure in alluding to the rapidly increasing attention which the subject of land drainage is receiving. Tile manufacturers, not only in this but adjoining counties, are selling large quantities, and there appears to be almost a universal awakening to the importance of the subject. One of the Vice-Presidents of this Society, Mr. H. J. Boulton, whose name as widely known as associated with the subject of land drainage, has laid in 50,000 tiles on his farm in Etobicoke during the past season, effectually draining about 40 acres of land, and intends proceeding vigorously with the work in future.

TOWNSHIP BRANCHES.

Etobicoke.—One hundred and seventy-eight members; amount of subscriptions and donations, $363; balance on hand from previous year, $221 09; public grant, $188 68; grant from Township Council, $60; entries at shows and ploughing match, $84; total receipts, $916 77. Paid premiums at shows and ploughing match $611 50; expenses and sundries, $157 77; balance in Treasurer's hands, $147 50.

York.—Two hundred and fifty members; subscriptions, $304; government grant, $99 30; grant from township and York municipalities, $157; donations, $149; received from late treasurer, $20; receipts at show and ploughing match, $104 99; total received, $834 29. Paid premiums, $516; expenses, $226 84; balance in treasurer's hands, $91 45. The exhibition, the directors report, was highly satisfactory, both in the number and quality of the animals and articles exhibited, the number of entries being over one thousand.

Extracts from Report:—

The Township of York rates very high in its growth of the cereals, and this year it has not lost its standing. Its wheat crop was excellent in quality, and a very high average was obtained, estimated at over 22 bushels per acre. Barley and oats were also very good. Barley averaged 30 bushels, and oats 40 bushels per acre.

The wheat fly made its appearance, but did not injure the crop over two per cent. Peas were sown to a very considerable extent, and a large and excellent crop was harvested. This crop did not appear to suffer this season from any insect or bug, which is sometimes the case, damaging considerably the product.

Rye, buckwheat, and corn, are not generally grown in this township; if the destruction of the fly should increase, it would be well for our farmers to extend the cultivation of these grains. The June frost injured the corn very much.

Potatoes,—There was a large breadth of land planted this year with this crop, and a large product obtained, but in many instances the rot has diminished the crop one half.—The June frost cut off and injured greatly those early planted. Those on under-drained land appeared to suffer least from the rot.

Turnips,—Of this crop a very large average crop was obtained, between 800 or 900 bushels per acre was considered not too high an estimate. Our farmers (thanks to agricultural societies) begin to appreciate this crop, its cultivation is greatly on the increase, as is also that of mangel wurzel and carrots, good crops of which were gathered. Clean cultivation and frequent stirring of the soil influence greatly the amount of crop obtained. Much improvement in the management of these crops by our farmers is apparent.

Flax and Hemp,—Of these crops little or none is grown; it is a question worthy of consideration whether it would not be more to the advantage of our farmers if these crops were grown more extensively.

Hay,—Little can be said of this crop, it was a poor crop in all cases, and in many a complete failure. It is singular, but true, that this crop never was so bad, while at the same time other spring crops never were better.

Underdraining,—This improvement has been carried on to a considerable extent, and appears to be on the increase, its advantages are no longer a problem. Tile draining is the mode generally adopted—and it is pleasing to be able to state that several new and approved machines have been imported during the year and have been in successful operation, and that several persons are now manufacturing tile well adapted to the purpose of underdraining at prices lower than heretofore. Messrs. Wm. Lea, Nightingale, & Gibbs, have established yards in this township, where tiles can at all times be obtained at from $6 to $10 per thousand.

TORONTO.

Electoral Division Society.—Three hundred and seven members; amount of subscriptions, $315; received from funds of late Horticultural Club, $32.32; grant from City Corporation, $100; Government grant, $173.40; net proceeds of exhibition held jointly with the West Riding of York Agricultural Society, $2!8.20; total received, $838.92. Paid in premiums, $534 50; expenses, $53.43; balance in Treasurer's hands, $250.99. The joint exhibition consisted of an excellent display of anim ls, grain, roots, fruit, flowers, machinery manufactures, paintings, ladies' work work,&c., amongst which were many first-class specimens of live stock, and of agricultural and mechanical skill. In regard to the fruit and vegetable department, the Directors make the subjoined remarks:

Extracts from Report.

In the fruit department the display was not as extensive as could have been wished; this was, doubtless, owing in a great measure to the severe frosts which occurred during the blossoming season in June, and which did great injury to most of our hardy fruits. But it is to be feared that the deficiency in the number of specimens exhibited, more especially in the pomological class, is in some degree atttibutable to want of skill and enterprise on the part of our fruit growers, who are allowing themselves to be supplanted, even in our home markets, by foreign producers. This is the more inexcusable as our soil and climate are admirably adapted for the cultivation of the apple, and the few extremely good collections which were exhibited, proved most satisfactorily what *could* be effected, by ordinary skill and attention bestowed upon the cultivation of this most valuable fruit.

There were some good collections shown of pears, peaches, and grapes, (grown in the open air,) and of the latter fruit, some magnificent specimens grown in *cold vineries* were exhibited. Great progress has certainly been made in our own immediate neighborhood, during the last few years in the cultivation of this delicious fruit, and it is gratifying to note the success which has attended the erection of cold vineries and orchard houses, by several of our leading citizens and horticulturists. Some of the grapes exhibited, grown in cold houses, could hardly have been surpassed anywhere, either for size or flavor, a fact which speaks volumes in favor of our mode of cultivation, which, while it brings the fruit to a high state of perfection, is of a comparatively simple and inexpensive character.

The show of vegetables, as may be seen by the very large number of entries made in this

department was most extensive, and both for their numbers and excellence they formed one of the best features of the exhibition. It would be impossible to speak in too high praise of the quality of most of the specimens exhibited. Some of the different varieties of potatos shown were especially excellent. Many new kinds were exhibited, some especially worthy of commendation, and evincing most careful and successful cultivation of this invaluable root. The same praise may be awarded to the beets, carrots, parsnips, and other vegetables. And it may safely be asserted of this department, that both in numbers and quality it surpassed anything of the same kind that has before been witnessed in Toronto.

Miscellaneous.

Occupation of Women in France.—In France woman is permitted to engage in many occupations which are performed with us entirely by the male sex. She often acts as ticket dispenser at railway stations, as bookkeeper at hotels and shops, and as attendant on the heaped tables of the reading room.

The watchmaker consigns to her delicate touch the finer parts of his mechanism, and the jeweler the setting of his costly gems. The wood engraver expects his most delicate and tasteful cuts from her hands; and the picture dealer invites her to plant her easel in the Louvre of Luxembourg, to reproduce, as she well can, the masterpieces of ancient or modern art.

Nor is the mallet of the sculptor considered to disgrace the hands of a princess—one of the noblest statues of modern times, representing Joan of Arc clasping the consecrated sword, being the production of a daughter of the late citizen king. The individual and social advantages which the honor that is thus paid to labor brings are incalculable. Pride is never permitted to interfere with usefulness; and many a young woman, who would have been debarred, as with us, by its pernicious influence, from the honorable employment of her powers, is enabled by the wiser and more merciful arrangements which obtain in France, to secure a virtuous and comfortable independence.——*Scientific American.*

Revelations of the Microscope.—Wherever we turn within the precints of our own homes, in meadow or moorland, hill or forest, by the long seashore, or amidst crumbling ruins, fresh objects of interest are constantly to be found; plants and animals unknown to our unaided vision, with minute organs perfectly adapted to their necessities; with appetites as keen, enjoyments as perfect as our own. In the purest waters, as well as in thick, acid, and saline fluids, of the most indifferent climates, in springs, rivers, lakes, and seas, often in the internal humidity of living plants and animals, even in great numbers in the living human body—nay, probably, carried about in the aqueous vapours and dust of the whole atmosphere, there is a world of minute, living, organized beings, imperceptible to the ordinary senses of man. In the daily course of life, this mysterious kingdom of diminutive living beings is unnoticed and disregarded; but it appears great and astonishing, beyond all expectation, to the retired observer who views it by the aid of a microscope. In every drop of standing water he very frequently, though not always,, sees by its aid rapidly moving bodies, from 1.96 to less than 1.2000 of a line in diameter, which are often so crowded together that the intervals between them are less than their diameter. If we assume the size of the drop of water to be one cubic line, and the intervals though they are often smaller, to be equal to the diameter of the bodies, we may easily calculate, without exaggeration, that such a drop is inhabited by from one hundred thousand to one thousand millions of such animalcules; in fact, we must come to the conclusion that a single drop of water, under such circumstances, contains more inhabitants than there are individuals of the human race upon our planet.—*Westminster Review.*

Curious Animal.—Australia is a land full of natural wonders to us. Great tracts of that country are covered with balls of quartz, shot, as it were, from some lunar battery; the natives kill the jumping kangaroo by shooting the boomerang "round the corner;" and there is the *ornithoryncus*, which puzzles naturalists to classify by its paradoxical peculiarities. It appears to be a link between the quadruped, bird and reptile. Its body is something like that of a beaver; it has four short legs, and is web footed, and on its little flat head it has the bill of a duck. These creatures live a great deal in water; their resorts are quiet creeks fringed with weeds, among which they search for food. They burrow in the banks of streams like moles; in disposition they are timid, playful and harmless and they have been made very amusing pets.

The City Underground.—The buildings above ground in our crowded metropolis are probably equalled by the subterranean works which traverse the city and suburbs in every direction. Endless miles of sewers, now to be in part superseded by vast cloacæ rivalling those of ancient Rome; water service brought to every inhabitant's door; gas mains and pipes, so carefully laid down that the whole soil is saturated by the foul air escaping from them; and those mystical wires, which carry out the whispers of the electric telegraph—all these cross and recross every foot of our great thoroughfares; and out of what seems their inextricable confusion,

results the most striking and useful are educed. Within these few months, also, the gigantic plan of an underground metropolitan railway, to connect all the termini in one London centre, has been in part accomplished, and, in a little more than a twelvemonth, a large portion of the merchandise, now encumbering the principal streets and roads, will pass to its destination through the bowels of the earth. In former times, when men began to build, their lease was said to make them free from the surface to the moon ; they might compete with the workmen at Babel, and, in some cases, a 10th or 12th story has been reached. At present, we enterprising bipeds are as profound as we were sublime ; and are taking possession of all under our feet as fearlessly as we once did of all over our heads ; and thus, if the fashion lasts, London may be tripled in size without adding an acre to its circumference. As subterranean builders, however, we have been forestalled, for our ancestors, often without intending it, have gone towards the centre, joining arch to arch, and burying silent streets which, centuries ago, echoed to the tread of their inhabitants in the cheerful sunlight. The surface of the city has risen in a marvellous manner, so that when we dig out a new foundation the pick-axe is arrested against the solid wall or groined roof of fabrics long covered by the accumulating debris of forgotten generations. Thus, many of the churches of London proper are built over enormous masses of sactuaries, wherein Saxons or Normans once worshipped.—*City Press.*

"Put by that Stick, my Man."—Young men would call upon him (Mr. George Stephenson) for advice or assistance, in commencing a professional career. When he noted their industry prudence, and good sense, he was always ready. But hating foppery and frippery above all things, he would reprove any tendency to this weakness which he observed in the applicants. One day a youth, desirous of becoming an engineer, called upon him flourishing a gold-headed cane. Mr. Stephenson said, "Put by that stick, my man, and then I will speak to you." To another extensvely decorated young man he one day said, "You will, I hope, Mr ———, excuse me ; I am a plain-spoken person, and am sorry to see a nice-looking and rather clever young man like you disfigured with that fine patterned waistcoat, and all these chains and fang-dangs. If I, sir, had bothered my head with such things when at your age, I would not have been where I am now."—*Men Who Have Risen.*

Life in the Sea.—Brimful of life at its surface, the sea would be encumbered if that prodigious power of production was not kept somewhat in check by the antagonistic power of destruction. Only imagine that every herring has from fifty to seventy thousand eggs ! If every egg was to produce a herring, and every herring fifty-thousand more, were there not an enormous destruction goin on, the ocean would very soon be solified and putrified. The great cetacea drive them towards the shores, ever and anon diving into their ranks and swallowing up whole shoals. The whiting eat their fry ; cod again devour the whiting. Yet, even here, the peril of the sea, an excess of fecundity, shows itself in a still more terrible shape. The cod has up to nine millions of eggs, and this creature, of such formidable powers of maternity, has nine months of love out of twelve. No wonder that the fishery of this productive fish has created towns and colonies. But even then, what would the power of man be opposed to such fecundity ? He is assisted by others, among which the sturgeon takes chief rank. Then, again, the sturgeon itself is a very fecund fish. This devourer of cod has itself fifteen hundred thousand eggs. Another great devourer is not proportionately reproductive, and that is the shark ; so Michelet calls it *Le beau mangeur de la nature, mangeur patente, le requin.* Viviparous, he nourishes the young shark in his bosom, his feudal inheritor, who is born terrible and ready armed. Hence are sharks called in many countries sea-dogs, and so we lately saw the French *chien de mer* literally translated.—*Blackwood.*

Origin of the Term Wild Goose Chase.—Wild goose chase was a term used to express a sort of racing on horseback formerly practised resembling the flying of wild geese ; those birds generally go in train one after another—not in confused flocks as other birds do. In this sort of race, the two horses, after running twelve score yards, had liberty, which horse soever could get the lead, to take what ground the jocky pleased, the hindermost horse being bound to follow him within a certain distance agreed on by the articles, or else to be whipped in by the triers and judges who rode by ; and whichever horse could distance the other won the race. This sort of racing was not long in common use, for it was found inhuman, and destructive of good horses, when two such were matched together. For in this case neither was able to distance the other till they were both ready to sink under their riders, and often two very good horses were both spoiled, and the wagers forced to be drawn at last. The mischief of this sort of racing soon brought in the method now in use, of only running over a certain quantity of ground, and determining the plate or wager by coming in first at the winning-post. The phrase "wild goose chase" is now employed to denote a fruitless attempt, or an enterprise undertaken with little probability of success.

Insect Appetite.—The man who wished he had a throat a mile long, and a palate all the way, might envy the feats performed in the world of insignificance. Some insects are endowed with an appetite so keen, and a digestion so rapid,

that they can eat incessantly throughout the whole of their lives. They begin as soon as they are born, and eat steadily on till they die. Their existence is a feast, without a change of plates, or a pause between the courses. Morning, noon, and night their mouths are full, and an endless procession of favourite foods gratifies the unwearied palate. They know not the names of meals. Breakfast commences with infancy, and their only after-dinner nap is a passage to another state of existence.—*Once a Week.*

A La Claire Fontaine

The following is a translation of this Song of the French Canadians, referred to in the narratives of the Saguenay Excursion of H. R. H., the Prince of Wales:—

As by the crystal fount I strayed,
On which the dancing moonbeams played,
The water seemed so clear and bright,
I bathed myself in its delight.
I loved thee from the hour we met,
And never can that love forget.

The water seemed so clear and bright,
I bathed myself in its delight;
The nightingale above my head,
As sweet a stream of music shed.
I loved thee from the hour we met,
And never can that love forget.

The nightingale above my head,
As sweet a stream of music shed.
Sing, nightingale! thy heart is glad!
But I could weep for mine is sad!
I loved thee from the hour we met,
And never can that love forget.

Sing, nightingale! thy heart is glad!
But I could weep for mine is sad!
For I have lost my lady fair,
And she has left me to despair!
I loved thee from the hour we met,
And never can that love forget.

For I have lost my lady fair,
And she has left me to despair!
For that I gave not, when she spoke,
The rose that from its tree I broke.
I loved thee from the hour we met,
And never can that love forget.

For that I gave not, when she spoke,
The rose that from its tree I broke;
I wish the rose were on its tree,
And my beloved again with me!
I loved thee from the hour we met,
And never can that love forget.

Journal of Education, Montreal, Nov. 1860.

Origin of the Names of the Days of the Week.—In the Museum at Berlin, in the hall devoted to northern antiquities, they have the representations of the idols from which the names of the days of the week are derived. From the idol of the sun comes Sunday. This idol is represented with his face like the sun, holding a burning wheel, with both hands on his breast, signifying his course round the world. The idol of the Moon, from which comes Monday, is habitated in a short coat like a man, but holding the moon in his hands. Tuisco, from which comes Tuesday, was one of the most ancient and popular gods of the Germans, and represented in his garments of skin, according to their peculiar manner of clothing; the third day of the week was dedicated to his worship. Woden, from which comes Wednesday, was a valiant prince among the Saxons. His image was prayed to for victory. Thor, from whence Thursday, is seated in a bed, with twelve stars over his head, holding a sceptre in his hand. Friga, from whence we have Friday, is represented with a drawn sword in his right hand and a bow in his left. Sater, from which is Saturday, has the appearance of perfect wretchedness; he is thin-visaged, long haired, with a long beard. He carries a phial of water in his right hand, wherein are fruits and flowers.

Shade Trees in Paris.—It has been calculated that Paris, at present, covers a space of 78,080,000 yards. It contains 148,000 trees, occupying a space equal to 336,890 square yards. The trees consist of horse-chestnuts, elms, acacias, lime trees, and others. It is estimated that these trees cover, with their shade, a space of 220,200,000 yards, sufficient to protect 1,589,000 individuals from the rays of the sun.

Good Manners.—Good manners are blossoms of good sense, and, it may be added, of good feeling too; for if the law of kindness be written in the heart, it will lead to that disinterestedness in little as well as in great things—that desire to oblige, and attention to the gratification of others, which is the foundation of good manners.—*Locke.*

Obnoxious to Bed-bugs and Flies.—Coal oil is said to be a sure destroyer of bed-bugs. Apply plentifully with a small brush or feather in the places where they most do congregate. The cure is effectual and permanent. Gilt frames, chandeliers, rubbed lightly over with coal oil will not be disturbed by flies.

Parisian Mode of Roasting Apples.—Select the largest apples; scoop out the core without cutting quite through; fill up the hollow with butter and fine, soft sugar; let them roast in a slow oven and serve up with the syrup.

Guano was first introduced into England in 1841,—twenty casks being brought to Liverpool by Mr. Myers. Subsequently its use became so general, that, for the ten years ending 1857, the English farmers expended more than *one hundred millions of dollars* in its purchase.

On Hair.—Hair is the dry, round, elastic fibres or filaments that arise from the skin, and are fed by the medullary juices. It is found on the "Mammalia" tribe, on every part of the body except on the soles of the feet, and on the palms of the hands; and in the shape of hair, bristles, wool, scales, and spines, is found much diffused over the animal creation. Hair grows in vascular pulps, with the roots enclosed in bulb-shaped capsules, situated within the skin; it is of a horny nature, and composed of smooth lamella placed over one another like zones, which increase by thrusting the parts forward as in nails, and not by a liquor flowing along the tubes as in plants. The felting property is owing to this quality in hair, and carried forward in wool, and in bristles, and other hairs; the horny substances are arranged like the woody fibres of a cane. Hair burned to ashes has given iron and maganese. phosphate, sulphate, and carbonate of lime, muriate of soda, and a considerable portion of silica. Gelatine is produced by boiling it, and imparts the flexible toughness; continued boiling dissipates the gelatine, and the remains are brittle, crumble to pieces between the fingers, and resemble coagulated albumen, in being insoluble in water. White hair yields magnesia, which is wanting in the other colours; and red hair contains less iron and manganese, the ashes do not exceed 0-15 part of the hair.

Hair is composed of—

1. Animal matter chiefly.
1. White solid oil, small quantity.
3. Greyish green oil more abundant.
4. Iron.
5. Oxide of manganese.
6. Phosphate of iron.
7. Carbonate of lime.
8. Silica.
9. Sulphur.

The animal matters are chiefly gelatine and albumen, and a substance resembling both, and the operation of hair as a manure, is similar to bones and horn-shavings. It has been sold at 1s 6d per bushel, and 30 bushels have been applied to an acre, and may be covered in the land by one ploughing, or mixed with earths in composts.

Influences of the Dwelling.—We talk about houses, my friend: we look at houses; but how little the stranger knows of what they are! Search from cellar to garret some old country house, in which successive generations of boys and girls have grown up, but be sure that the least part of it is that which you can see, and not the most accurate inventory that ever was drawn up by appraiser will include half its belongings. There are old memories crowding about every corner of that home unknown to us: to minds and hearts far away in India and Australia everything about it is sublimed, saddened, transfigured into something different from what it is to you and me. You know for yourself, my reader, whether there be not present elsewhere about the window where you sat when a child and learned your lessons, the table once surrounded by many merry young faces which will not surround it again in this world, the fireside where your father sat, the chamber where your sister died. Very little indeed can sense do toward showing us the Home; or towards showing us any scene which has been associated with human life and feeling and embalmed in human memories. The same few hundred yards along the seashore, which are nothing to one man but so much ribbed sea-sand and so much murmuring water, may be to another something to quicken the heart's beating and bring the blood to the cheek. The same green path through the spring-clad trees, with the primroses growing beneath them, which lives in one memory year after year with its fresh vividness undiminished, may be in another merely a vague recollection, recalled with difficulty or not at all.

Each in his hidden sphere of joy and woe,
  Our hermit spirits dwell and range apart;
Our eyes see all around in gloom or glow,—
  Hues of their own fresh borrowed from the heart.

—*Recreations of a Country Parson.*

Prince Edward Island.—The following statistics from the *Prince Edward Islander*, show not only the capacity of the Island, but the great increase it has been making in agricultural wealth during the past twenty years. The amonnts shown are not the whole produce, but only the exports, for the years mentioned;

	1838.	1859
Oats, bushel,	155,783	1,111,970
Barley, "	23,601	97,935
Potatoes, "	167,596	465,360
Turnips, "	6,341	24,950
Dry fish, qtls.,	3,810	19,465
Pickled fish, lbs.,	1,482	10,336

Editorial Notices &c.

The North British Review.—May 1861. Blackwoods' Edinburgh Magazine for June. New York, Leonard Scott & Co. Toronto, H. Rowsell.

The *North British* may now be said to have fully regained the high literary character under its new management, for which it was distinguished during its earlier career. The able articles on the American secession; present movement in the Church of England; Railway accidents, and the Educational Question, will be read with great interest and profit on this side of the Atlantic. Several other articles treating on subjects that have a wide spread interest, are equally able. *Blackwood*, as usual, is full of

racy wit;—seldom indeed does dulness characterise a single article in this old established magazine. The Book Hunters; The Monks of the West; Miss Bremer in Switzerland and Italy; From the Fatherland; Memoirs of a Tory Gentlewoman, are among the leading articles of the present number which our readers will welcome.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES FOR UPPES CANADA, JULY 1861

We are happy to find this new coadjuler in the good work of native industry and provincial high improvement continues fully to sustain the and useful character which distinguished its commencement. The July number has articles on the International Exhibition of 1862; The Dundas Cotton Factory; Chemical History of a Candle; Vegetable Food;—besides a number selected, and copious information on matters relating to the proceedings of the Board of Arts both in Upper and Lower Canada; Canadian Inventors and Patentees, correspondence, &c. It will be seen from this enumeration that the Journal embraces subjects of great importance, and possessing a wide interest. Not only should it be read by manufacturers, mechanics, and merchants, but the more enterprising and intelligent of our farmers might frequently consult its pages with advantage.—Price $1 for single copies; to clubs of ten 75 cents per copy. Members of Mechanics Institutes and Agricultural Societies, organised according to Statute, can procure the Journal at the extremely low price of half-a-dollar a year!

We may notice that the Board of Arts and Manufactures have removed into a capacious suite of rooms in the new Mechanics' Institution, corner of Church and Adelaide Street; where strangers visiting Toronto would do well to call. Mr. Edwards, the Secretary, will always be found ready to give information on all matters pertaining to the operations of the Board.

CORRECTION. — In the communication on "Judges and Unsuccessful Competitors" in our last number, page 388, in the last paragraph but one, we find that a typographical error has occured which has changed the meaning of the writer. The word "annoying" was written and should have been printed "amusing."

FRESH GARDEN, FIELD and FLOWER Seeds for Spring Sowing.

The Subscriber begs to inform his friends and the public that his stock of Fresh Seeds is now complete, and very extensive, embracing almost

EVERY VARIETY OF SEED

that is adapted to the country. The stock of Agricultural Seeds is large and well selected, and the vitality of each sort being fully tested, the genuineness of the seeds may be fully relied upon.

Merchants and Agricultural Societies ordering Seeds in bulk will be supplied at wholesale prices. Complete assortments of garden seeds neatly put up in small papers, with directions for sowing, and sold by the box containing 150 papers for $5. Twenty packages of Flower Seeds, choice sorts, will be sent free by post to any part of the Province, to the address of any party remitting $1, free of postage, or 25 packages, postage unpaid.

The Subscriber wishing to give parties who reside at a distance an opportunity to test the qualities of his seeds, will on the receipt of $2, free of postage, send free to any Post Office in Canada, 25 full sized packages of VEGETABLE SEEDS, many of them containing an ounce of seed, and 12 papers of choice FLOWER SEEDS with descriptive catalogue and box included—the seeds to be of my own selection. None but the most useful and desirable varieties will be sent.

Descriptive catalogues of Garden, Field and Flower Seeds furnished gratis to applicants.

JAMES FLEMING,
Seedsman to the Agricultural Association of Upper Canada,
350 Yonge Street.

Toronto, April 22, 1861. 9—3t.

TO LANDED PROPRIETORS.

AN experienced English Agriculturist, for several years practically acquainted with the Canadian Farming, wishes to undertake the management of a Farm, either on shares, or as Bailiff to the owner.

Satisfactory references and testimonials given by addressing AGRICULTURIST, *Post Office Paris, C. W.*

Paris, C. W. June, 1861 3t.

BOARD OF AGRICULTURE.

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March 9, 1861. 6t

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The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

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On Cross-Breeding.

There are few subjects, perhaps, connected with practical husbandry in which more misapprehension prevails, than in that which is usually designated cross-breeding; yet the true principles on which this practice is or should be conducted, are extremely simple, and ought to be familiar to every breeder who seeks to obtain a useful and profitable result. The great object of cross-breeding is to produce an animal that shall afford a large amount of prime meat in a shorter space of time than in the ordinary way with pure breeds; and consequently such animals are mainly bred for the butcher. They cannot be perpetuated. It is a well-known fact among practical men that you cannot go on breeding from a cross-breed stock without suffering a gradual, and in most cases, a rapid deterioration. Successful cross-breeding is essentially dependent on the previous existence of pure breeds, and can only be carried on with beneficial results, after those breeds have been thoroughly established and have made considerable progress. In crossing animals no ordinary amount of care and judgment is necessary in making suitable selections. Those of the most opposite natural or acquired characteristics will breed with each other, but the progeny in such cases will be found generally unsatisfactory. Certain natural affinities or alliances should be sought for, or cross-breeding will in a great measure be unattended by improvement or profit. In case where both parents are really good of their kind, their offspring will almost always possess advantages, especially for the butcher. But it is an error of the gravest kind, as all experience shows, that you can continue breeding from such a cross without suffering certain deterioration, both as regards weight and quality of flesh, and, in case of sheep, of wool, also. In case of dairy stock the foregoing observations will likewise apply, although perhaps in not so marked a degree. The first cross is usually the best for milking purposes, and it is found tha the process cannot be carried on indefinitely with impunity.

Entertaining these views, which are now endorsed by the most enlightened breeders of all countries, we are happy to observe that our venerable friend the Hon. Adam Fergusson, who, as most of our readers know, has spent a long life in Scotland and in Canada, in promoting the improvement of agriculture, particularly stock-raising, has offered through the Board of Agriculture a very handsome premium for the best grade heifer, the produce of a pure Durham bull, from a cow of any breed, not more than one remove from thorough breed. The prize is in the shape of a silver cup, which Mr Fergusson intends to present annually at the Provincial Exhibitions; also two silver medals for poultry: particulars will be found stated in the Prize List of the Association for the present year. We say that we are glad to see this, because it will

give an impetus to stock-breeding in the right, and, as we think, most important direction, admirably suited to the wants and necessities of this Province. It will for many years to come be perfectly impossible for our farmers generally to have their yards filled with pure bred cattle, even of ordinary excellence. It is so at present, even in England. Pure herds of first-rate quality are only here and there to be found :— whether they be Durham, Hereford, Devon, or other established breeds. To acquire such animals involves an amount of pains, judgment, and expense, which few can fully understand.— The quickest and most practicable way of improving our live stock, particularly cattle, is to put our best grade cows to the best pure bred bulls within reach. By such means the cattle of the country *as a whole*, will be speedily increased 30 or 40 per cent in value, thus greatly adding to the wealth of the Province. It is of course essential to the successful carrying out of this plan that individuals here and there should be encouraged to keep up a pure herd of stock of some established breed, who would supply bull calves as well as heifers to all parts of the country. We already owe much to a few enterprising individuals in this respect, to whom Canada is mainly indebted for the great improvement in live stock, which she has of late years made. The Durham bull has already done much service in several parts of this country where as yet very little that is really pure of that invaluable breed exists. It is easy to tell by looking at the ordinary stock of any particular district, whether any pure male animals have found their way thither; the progeny ill speak for itself Not a single pure bred bull has ever been introduced into a township without raising the standard of excellence among its cattle, and the same remarks apply of course, more or less, to horses, sheep and pigs.

We have been much pleased with a paper in a recent part of the *Journal of the Royal Agricultural Society of England*, from the pen of W. C. Spooner, the well-known Veterinary surgeon, on the subject of cross-breeding, and submit the following condensed statement of the various points so ably treated in detail by the talented author, for the information of our readers.

1st. It is clearly shown by the writer that there is a direct pecuniary advantage in judicious cross-breeding; that increased size, a disposition to fatten, and early maturity, are thereby induced.

2nd. That whilst this may be caused for the most part by the very fact of crossing, yet it is principally due to the superior influence of the male over the size and external appearance of the offspring; so that it is desirable for the purposes of the butcher, that the male should be of a larger frame than the female, and should equal, in those peculiarities we are desirous of reproducing. Let it here, however, be stated as an exceptional truth, that though as a rule the male parent influences mostly the size and external form, and the female parent the constitution, general health and vital powers, yet that the opposite result sometimes takes place.

3rd. Certain peculiarities may be imparted to a breed by a single cross. Thus, the ponies of the New Forest exhibit characteristics of blood, although it is many years since a thorough bred horse was turned into the forest for the purpose. So, likewise, is observed in the Hampshire sheep, the Roman nose and large head which formed so strong a feature in their maternal ancestors, although successive crosses of the Southdown were employed to change the character of the breed.

It has been asserted by some observers, that when a female breeds successively from several different males, the offspring often has a strong resemblance to the first male; which is supposed to arise from certain impressions made on the imagination or nervous system of the female. Although this is sometimes or often the case, it is much to be doubted whether it is so frequent as to be regarded as a rule.

4th. Although in the crossing of sheep for the purpose of the butcher, it is generally advisable to use males of a larger breed, provided they possess a disposition to fatten, yet in such cases, it is of importance that the *pelvis* of the female should be wide and capacious, so that no injury should arise in lambing, in consequence of the increased size of the heads of the lambs. The shape of the ram's head should be thinner for the same reason. In crossing, however, for the purpose of establishing a new breed, the size of the male must give way to the more im-

portant consideration; although it will still be desirable to use a large female of the breed we seek to improve. Thus the Southdowns have vastly improved the larger Hampshires, and the Leicester the huge Lincolns and the Cotswolds.

5th. Although the benefits are most evident in the first cross, after which, from pairing the cross-bred animals, the defects of one breed or the other, or the incongruities of both, are perpetually breaking out, yet, unless the characteristics and co-operation of the two breeds are altogether averse to each other, nature opposes no barrier to their successful admixture; so that in the course of time, by the aid of selection and careful weeding, it is practicable to establish a new breed altogether. This, in fact, has been the history of our principal breeds. The Leicester was notoriously a cross of various breeds in the first instance, although the sources which supplied the cross is a secret. The Cotswold has been crossed and improved by the Leicester; the Lincoln, and indeed all the long-woolled breeds have been similarly treated. Most of the breeds have received a dash of better blood, and the short-wooled sheep have also been generally so served. The Hampshire and the present Wiltshire Downs have been extensively crossed; the friends of the Shropshire cannot deny the 'soft impeachment;' and the old black-faced Norfolk, have been pretty well crossed out altogether. The Dorsets and Somersets remain pure as a breed, although they are continually crossed to improve their lambs. The Southdown is perhaps one of the purest breeds we have. No one asserts that the immense improvement of this breed by Ellman was due to any crossing; whether the increased size and further improvement which it has received in other countries have been effected in all cases without a cross of any kind, may be in the minds of some a matter of doubt; yet it is only right to give the arraigned, in the absence of any proof to the contrary, the benefit of such doubt, and consider them still as pure as ever.

We recommend the following remarks, with which Mr. Spooner concludes his paper, to the attention of those who resort to cross-breeding with any other view than that of feeding the first produce of that cross:—"When equal advantages can be attained by keeping a pure breed of sheep, such pure breed should unquestionably be preferred; and though crossing for the purpose of the butcher may be practised with impunity, and even with advantage, yet no one should do so for the purpose of establishing a new breed, unless he has clear and well defined views of the object he seeks to accomplish, and has duly studied the principles on which it can be carried out, and is determined to bestow for the space of half a life-time his constant and unremitting attention to the discovery and removal of defects." And we may add that there is no instance of any one establishing a new breed, which has attained a permanent type. Where new breeds have been established, as, for instance, the Wiltshire and Hampshire Downs, it has been the result of a *general change* by all the farmers of a district, working under similar natural circumstances in one direction; but, after all, they are but sub-varieties of a pure breed, and gradually more and more approach the characteristics of that breed

The Mutual Relations of the Vegetable and Animal Kingdoms.

(*Continued from page* 426.)

In considering the principles of feeding, I may cite, as a special instance of adaptation, that the plant and animal were composed of the same chemical elements. Hence the food supplied by the latter invariably contains all the substances it requires for the maintenance of its functions; and not only is this the case, but these elements are to a great extent combined together in a similar manner, the fibrine, caseine, albumen, and fatty matters contained in animals, corresponding in all respects with the compounds extracted from plants under the same name. It is not within our province, and it is far beyond my ability, to prejudge the solution of those difficult and abstruse problems which have so long engaged the laborious research of the masters of science and practice. Still, whether we incline to adopt the respiratory or the nitrogenous theory of manures—whether we go with Lawes or Liebig—I think we may discern such a modification of views as will authorize us, in practice, to adopt a middle course, which has already shown itself in the advocacy of mixed food, so long established in practice—the flesh and fat forming constituencies combined, as in cake, turnips, and straw, the deficiencies of one being counterbalanced by the other. Without dispute, science and practice are cordially agreed—whatever may be said in support of the use, or condemnatory of the abuse, of special manures

—that well-made *farmyard manure* is the standard of economical efficiency, as "no other" (says Dr. Anderson) "fulfils the conditions of a general manure containing all the constituents of a crop in a state fit for assimilation, being derived from the *vegetable and animal* kingdom, and most effectually by the mixture of both." Peruvian guano is another very composite and valuable manure. Although its consumption is said to have declined from July '55 to July 1860 by a total diminution of 90,000 tons, it is still held to be the cheapest source of ammonia. I would mention incidentally as very important to be generally known, on the authority of Dr. Anderson, whose late valuable contribution to agricultural chemistry I cannot too highly recommend for its clear practical views, so plainly set forth "that it is no uncommon occurrence to find a difference of 1*l.* or even 2*l.* per ton, and in an extreme case 3*l.* between the values of cargoes of Peruvian guano which are sold at the same price." There may come a time when we shall be glad to meet the demands of an impoverished soil and an increasing population, to adopt the principle practised centuries ago by our new friends the Celestials, with their worldly sagacity, namely, the principle of restoring to the land everything that is taken away from it in crops. "The amount of phosphates in our edible crops is far beyond anything ever seen in natural wild plants; therefore the supply required by a dense population and obtained in the excessive development of seeds and roots in cultivated plants, must be given to the soil in the shape of manure, the best being that derived from man who consumes the crops.

The rotation of crops, which takes advantage of the fact that one crop requires more of one ingredient and less of some other, than another does, and the occasional use of fallow, which allows the weather to act and render soluble a fresh supply of mineral matter, are only different branches of the same great principle of agriculture. The cereals and grass require silica; turnips and potatos, more of the alkalies; peas, and beans, and clover, lime and sulphates; and thus may be alternated with advantage, although all require a full supply of the phosphates, in which night-soil is particularly rich." A grave stigma of reproach will continue to rest upon our skill and enterprise as a nation, so long as we permit this most valuable of manures to be worse than wantonly wasted. The growth of vegetables for the supply of man in this great city, according to Mr. Cuthill, requires no less than 12,000 acres of the richest land. "This," says Dr. Wynte, in his work on the "London Commissariat," "seems an insufficient area for the supply of so many months, but manure and spade husbandry compensate for the lack of space. By these agencies, four and sometimes five crops are extracted from the land in the course of the year. The old-fashioned farmer, accustomed to restrictions of old fashioned leases, would stare at such a statement, and ask how long it would last? But his surprise would be still greater at being told, that after every clearance the ground is deeply trenched, and its powers restored with a load of manure to every 30 square feet of ground. This is the secret of the return, and here we have a striking example of town and country reciprocation: the same waggon that brings a load of cabbages, is seen returning a few hours later filled with dung. An exact balance, as far as it goes, is thus kept up, and the manure, instead of remaining to fester among human beings, is carted away to make vegetables. What a pity the system cannot be extended to the whole sewage, instead of allowing it to pollute the Thames!" Nature, we are told, affords an appropriate vegetation to each class of animal. It is not by accident that the reindeer finds its support from the snow-covered lichen, or the camel from its thorny shrub, or the chamois a sufficient supply in the scanty vegetation of its Alpine home; but it is in obedience to the great law of nature, that wherever plants exist we find animals adapted to make use of their nutritious products.

The same principle applies itself, in a more familiar sphere, to the selection and management of stock, the grazing of cattle and sheep, with reference to soil, climate, and herbage. And no problem connected with the economy of farming is more important to be solved than the adoption of the breed of cattle and sheep most calculated to yield the largest balance of profit from the food consumed, with the most judicious general management. The different breeds are best adapted to their native pastures; and though they may, and have been greatly improved, they can very rarely be displaced with with impunity. How would the heavy Cotswold or the fat Leicester enjoy a scramble, in company with the active game-like little Welsh, in search of a scanty breakfast on his native mountains! What has been done by skill, capital, and enterprise, in bringing to perfection some of our choicest breeds of cattle and sheep, is too well known and appreciated to need special reference. It has not, however, been effected without a constant studious attention to the principle I am advocating, on which success mainly depends. The food directly or indirectly derived from vegetables must be skilfully adapted in quality and quantity to the requirements of the animal to be sustained or fed; and the animal must have such vigour of constitution and aptitude to thrive and fatten as shall enable it most beneficially to assimilate the largest amount of nourishment to be derived from the food presented to it. The formation of animals, breeding and grazing in all their departments, are amenable to this law of vegetable and animal dependence. How much valuable food is wasted by badly-bred animals, with no robustness of constitution, and but little aptitude to fatten; and how many a well-bred animal is

ruined for want of suitable food and skilful general management! If the master's eye grazes the ox, assuredly it should not long be diverted from the fold if he would avoid that "one bad day" which every flockmaster knows too well will take many a good one to recover. It has lately been held important to our national prosperity to attempt the acclimatization of the Alpaca to increase the supply of wool. The question to be determined yields us an illustration, for even the *Ichu* grass—its favorite herbage in Peru—was found indigenous on the va t grazing grounds of the Australian continent, and the climate brings the animal to earlier maturity than South America; and so the animal and vegetable are in adaptation. While we wish the project good success, still, as British farmers mindful of the old tradition, we should seek to prop the tottering wool sack with larger supplies of British wool; thus modifying our systems in conformity with the probabilities of future profit and the requirements of the community at large. Considering the almost universal dependence of man on one important tribe of plants I refer to the cultivated grasses—and also the value of grasses as fodder for cattle, hardly second to that of corn for human food, it is one of the most interesting of all subjects to follow their distribution, which is determined not merely by climate, but depends on the civilization, industry, and traffic of the people; and often historical events.

Within the northern Polar circle agriculture is found only in a few places. Only in Europe, *i. e.*, Lapland, does the Polar limit reach an unusually high latitude (70 degrees). Beyond this, dried fish, and here and there potatoes, supply the place of grain. The grains which extend farthest to the north in Europe are barley and oats. These, which in the milder climates are not used for bread, afford to the inhabitants of the northern parts of Norway and Sweden, of a part of Siberia, and Scotland, their chief vegetable nourishment. Rye is the next which becomes associated with these. This is the prevailing grain of the northern temperate zone. In Siberia buckwheat is cultivated. In the zone where rye prevails wheat is generally found, barley being here chiefly cultivated for the manufacture of beer, and oats for horses. To these there follows a zone in Europe and Western Asia where rye disappears, and wheat almost exclusively furnishes bread. The middle or south of France, England, part of Scotland, part of Germany, Hungary, the Crimea, and Caucasus, part of America, also the lands of middle Asia, where agriculture is followed, belong to this zone. In the eastern parts of the temperate zone of the old continent—in China and Japan—our northern kinds of grain are very unfrequent, and rice is found to predominate. In North America wheat and rye grow, as in Europe, but more sparingly. Asia is the native country of rice, and America of maize. Both these grains are found in nearly equal quantity in Africa. Besides rice and maize, there are in the torrid zone several kinds of grain, as well as other plants, which supply the inhabitants with food. In the islands of the South Sea grain of every kind disappears, its place being supplied by the bread fruit tree and pisang plantains. In the tropical parts of New Holland there is no agriculture, the inhabitants living on the produce of sago and various palms. In the high lands of South America, there is a distribution similar to that of the degrees of latitude. Maize grows to the height of 7,200 feet above the level of the sea, but only predominates between 3,000 to 6,000 feet of elevation. Below 3,000 feet is associated with the pisang (plantain) and yams, batatas, and the bread-fruit; while from 6,000 to 9,260 feet the European grain abounds—wheat in the lower regions, rye and barley in the higher. Potatos alone are cultivated from 9,000 to 12,000 feet. To the south of the tropic of Capricorn, wherever agriculture is practised, considerable resemblance with the northern temperate zone may be observed. In the southern parts of Brazil, in Buenos Ayres, in Chili, at the Cape of Good Hope, and in the temperate zone of New Holland, wheat predominates; barley, however, and rye make their appearance in the southernmost parts of these countries, and in Van Diemen's Land. In New Zealand wheat is grown to advantage. The natives did subsist chiefly on the Acrastichum furcatum. Hence it appears that, in respect of the predominating kinds of grain, the earth may be divided into five grand divisions or kingdoms—the kingdom of rice, of maize, of wheat, of rye, and, lastly, of barley and oats. The first three are the most extensive, the maize has the greatest range of temperature, but rice may be said to support the greatest number of the human race. "Nor," says Johnson, "is a knowledge of the capabilities of a country for producing plants less important with reference to its population. Comparing Naples with Norway, for example, we find that the effect of climate is such as to render the harvest five times more productive in the former than the latter, while in consequence the population is twenty-five times more dense, in proportion to its area, in Naples than in Norway."

It is a remarkable circumstance that the native country of wheat, oats, barley, and rye should be entirely unknown. Though oats and barley were found apparently wild on the banks of the Euphrates, it is doubtful whether they were not the remains of cultivation. "It is an observable fact," continues Johnston, "that those plants of the grass tribe, the seeds of which furnish food for man, follow him like domestic animals. The reason is, that none of the corn plants can bear seeds that will yield a large quantity of flour without a good supply of phosphate of magnesia and ammonia. Hence these plants grow only in a soil which contains these

ingredients in addition to silex and potash, and no soil is richer in them than those where men and animals dwell together, since these substances are largely contained in the animal body, and are set free in their excretions during life, and by their general decay after death." Here are facts suggestive of important practical application. I fear I have exhausted the patience of my audience, for time and patience have their limits, though our subject is illimitable. The law of this divine harmony began in chaos, ages before man had an existence on the earth, furnishing it with stores for his use as a habitation; it is seen in constant operation throughout every part of the globe, and it stretches out into the vision of prophecy, when old things shall be done away, and there shall be a new heaven and a new earth adapted to perfected humanity. In conclusion, may I be permitted earnestly to recommend the study of the natural sciences connected with this deeply interesting subject (however feebly I may have developed it) to young farmers, on whose training the future of agriculture materially depends, during the long rustication, when the discipline of the school is gladly shaken off, and the youth, with his buoyant spirit revelling in his newly acquired freedom, flatters himself that he is studying agriculture, when he is in reality far too often losing all capacity for studious application, and enervating the noblest faculties of his mind by a continuous round of self-indulgent pleasure-seeking. Would that he were mindful, that of all the forces applied to agriculture, there is none worthy of comparison with the power of intellect, the power of knowledge, and the ennobling influences of high moral character. I would have him ponder well on the noble sentiment of the illustrious Charlemagne, "that they only can enjoy recreation aright whose sterner pursuits are sustained by the highest motives directed to the noblest ends." And "strange indeed," it has been well remarked, "must be the perversion of that mind which is made neither wiser nor better by studying the works of Him, whose own wisdom is infinite, and all whose operations tend to good and happiness." And nowhere is this more illustriously evidenced than in the sublime harmony which is seen to exist throughout the whole vegetable and animal kingdoms. (Cheers.)

The Late Duke of Bedford.

Just as agriculture is beginning to rejoice under the approving smile of Royalty itself, she turns aside for a moment to mourn the loss of a true friend. And right worthily may he who has just left us ask the tribute of a tear. He was a good man, who used his great means in doing great good to those around him. Descending of a noble race that has long stood high in the annals of agriculture, his own unchecquered career of usefulness will eclipse even the fame of his ancestors. Seldom has a man worked so steadily onwards. Rarely has any one left so many lasting monuments to his memory. At every turn wheresoever his path was followed, you saw what a blessing it was for the poor to own such a friend, the tenant to boast of such a landlord, and the gentry to feel the force of such an example. The blocks of clean comfortable cottages—the complete well-finished homesteads—the thriving schools, and the spiring churches—either alike in town or country, there is that record of him that the sculptor's art or the poet's pen will seek in vain to vie with. The Duke of Bedford has done his duty in that state of life in which it pleased God to place him. The charge was, no doubt, a heavy one; but he ably fulfilled it.

This is a high character; but it is an honest one. Regarded strictly as a landowner, there is perhaps scarcely such another illustration of his order as the late Duke of Bedford now left amongst us. *Liberality* and *Management* were the watchwords of his system; and amply, indeed, did it succeed. His grace's own home farm was a very model for others: and an eminent agriculturist from a distance, who went over this only the day before the duke's death, was alike gratified and surprised—at having seen such a farm, and at having previously heard so little of it. Then so perfect in their way had the Woburn holdings become, so well were the occupiers started and treated, that the very fact of being a tenant on the Bedfore estate gave a man a name and a standing. One amongst them who but a few years since thought he required a new range of farm-buildings, was invited to go through the country, and to see what he should like; and having made his choice, some of a similar description were erected for him. But there was method in all his liberality; and the duke's property had with every justice the repute of being the best-managed estate in the country. Much as his grace did himself towards this, excellent man of business as he was, he was ever well represented; for few agents have ever more fairly earned the esteem he has than Mr. Bennett, while it is not often that two such farm stewards have been found, the one to follow the other, as Mr. Baker and Mr. Coleman. If you may judge of a man alike by his works as by those about him, then did the Duke of Bedford deal discreetly with the talent with which he had been trusted.

If we search further, we only find what is already famous. The home farming in the park may be not so well known to all as it should be, but the housing of the labouring man has long been held up as the example for others. The Duke of Bedford spent upwards of sixty thousand pounds in building cottages for the labourers in his native county, and he hit the happy medium in doing so. They were not too good nor too costly for their actual purpose. The

Royal Agricultural Society published plans of them; the *Farmer's Magazine* gave prints of them; and the *Quarterly Review* wrote essays on them in this wise:—"As they embrace, moreover, every variety of cottage accommodation, none have been published, even by professed architects, so useful to the country builder as those which emanate from the study of Woburn. The duke has been as conspicuous in his deeds as in his plans. He has erected scores upon scores of new tenements for the labourer, and the result has been a marked improvement in the well-being of their inhabitants."

That last line or so might be taken for his epitaph. Whether it were in the crowded St. Giles, or the pleasant paths around the Abbey —to wherever the Duke of Bedford's influence extended, there was *a marked improvement in the well-being of the inhabitants.* You witnessed it alike in the tenantry and the peasantry, and, we had well nigh added, in the gentry of the neighborhood. Let the reader only turn to our paper of last week, and note how our reporter for Bedfordshire cited his grace's conduct to the other magistrates of the county. Let us but remember that, though good shot as he was, he gave up game preserving, and made the farmers his keepers; confident they never would deny him the means for fair sport. And let us dwell for a moment on the welcome with which this example was cited in the discussion last year on that delicate subject, the over-preservation of game; and how the Bedfordshire men answered at once for the success of the experiment. It was this feeling of the true sportsman that went to complete the character of the Duke of Bedford as a country gentleman. He cared not for the butcheries of the battue, if he could get fair, open shooting. He was a really good judge of a horse, and he bred some of the best; but he hated the mere trickery of the turf, and for many years, though he ran horses, rarely himself attended on a course. He was an admirable horseman, and whenever the Oakley were in want of a master, he took to them, still subscribing liberally when he gave them up again.

We write on no hearsay evidence. We have seen the farming at and about Woburn. We have "told off" the cottages as we have driven along. We have heard the reception given to the Duke of Bedford's name at many a meeting in the country, and we have learnt his character from all classes. It is one that we feel we could scarcely color too highly, and it is one that we would specially offer for imitation to the other great landowners of the kingdom. Property has its duties as well as its rights—a principle of which no man has given a higher or a more earnest interpretation than the late lamented Duke of Bedford.—*Mark-lane Express.*

The great underground railway in London, to connect all the railways of that metropolis, is being constructed with unflagging energy.

Sow Turnips.

Much discussion has been had in regard to the merits of what is called the English or flat turnip, and the expediency of its cultivation in this country. Without attempting an argument on the general subject, we venture to recommend the culture of this root under some circumstances:—

1. As an after-crop on grain and grass stubbles. Where winter rye has been taken off, the land, unless it is set to grass or is ploughed, is very liable to be overrun by weeds. The turnip may in such cases be sown as a fallow or cleaning crop. If the stubble is turned in soon after the grain is taken off, and a dressing of fine manure harrowed in, a fair crop of turnips may be obtained, if the seed is sown from the 20th of July to the 10th of August. It will be best to sow in drills, on account of the greater advantages which this method affords for killing the weeds—frequently an important object.—Sward-ground which it is designed to bring into cultivation next year, is often broken up in summer or early autumn. It is a very good plan, especially where the sward is tough and it is wished to have it rotten by the following spring. But growing a crop of turnips on it will hasten its decomposition, as after turnips are well started they shade the ground for the remainder of the season, and by preventing the grass and other vegetation from growing, cause the turf to decay rapidly.

2. Turnips are sometimes sown with rye and with grass-seed. Where the ground is rich and free from weeds, a fair crop of turnips may sometimes be taken without any apparent injury to rye. In such cases the turnip seed is generally sown broadcast, and the plants are not hoed, as hoeing would destroy some of the rye; they can be thinned by hand, if necessary, when at a proper size. Turnips are sometimes sown in a similar way with grass-seed, and we have been informed that the practice has resulted favorably, but we cannot speak of it from personal experience. It is obvious that care should be used in gathering the turnips not to injure the grass.

3. It sometimes happens that spots of greater or less extent in corn-fields have not a sufficiently good stand of corn to make a full crop. Turnips are frequently sown on such spots to advantage; and in many cases the seed may be scattered where the corn is too thin, and whatever the turnip crop amounts to is clear gain.

In either of the above cases, turnips are produced at very little cost—not over four to six cents per bushel. It is true they cannot be kept long, but there are many ways in which they can be made worth more than their cost.

As to manure, we may remark that superphos

phate of lime, of proper quality, is excellent for turnips, and if the article is applied at the time of sowing the seed, a good degree of the effect will be likely to seen in the following crops.—*Boston Cultivator.*

Agricultural Intelligence.

The Exhibition of 1862.

The brick walls are now more than 30 feet high; the floor of the picture gallery is being laid, and the skeleton of the eastern end of the great structure is now mapping out in piles of brown columns, with some interlacings of trellis and face girders, the number and extent of which visibly grow with every hour's labour. Before August much of the second story will be completed, and even the massive arches which span the nave will be turned across and in their places. The immensely increased rapidity with which iron structures of the most enduring kind can be run up as compared with those of brick or stone is shown by the way in which the metal portions of the building have progressed over the picture gallery. The latter part of the structure, though begun long before the rest, is only about thirty feet high, while in some parts the iron work is upwards of fifty feet. The works connected with the picture gallery are, however, of no ordinary magnitude and substance, for all connected with this portion of the building is most massive, as may be imagined from the fact that these walls have already consumed over 6,000,000 bricks, and will require nearly 12,000,000 more to complete them. Upwards of two miles of little tramways intersect the ground in all directions, and along these a couple of men can move a truck with four or five tons of girders at a far greater speed than six or eight horses could move them in a wagon. With the same view a small powerful steam engine is placed in the centre of the works, and connected by a network of ropes passing through pulleys over all parts of the ground. By means of these loads are drawn about the tramways, or columns and girders hoisted and bolted in their places, with amazing rapidity and ease. But the most astonishing of these labor-saving contrivances is a gigantic travelling scaffold, which has been built on twelve wheels, to run on rails up and down the whole length of the nave. This huge structure is 60 feet square and 100 feet high, and weighs nearly 300 tons. Yet four men with levers can move it almost quickly to any part of the works. It will be used in hoisting the upper columns, the huge circular wooden ribs of the roof, for painting, or, indeed, for any purpose connected with the building where many men have to be employed at a great height. Messrs. Kelk and Lucas are confident that they will be able to hand the building over to the Commissioners completely finished before the stipulated time—even as early as in March next, it is said. As regards other matters connected with the intended display, everything is progressing in a most satisfactory manner. The local and trade committees have been formed throughout the United Kingdom, and are everywhere working well. In 1851 there were, at the opening of the building, 8,000 exhibitors. Already the Commissioners have received the names of upwards of 6000, and others come in daily. On the continent the intended Exhibition is received with the utmost favour. France, Prussia, Russia, Sweden, Norway, Italy, Spain, Portugal, and Belgium are especially active in the cause, and the latter country has evinced its interest by asking just double the amount of space it can by any possibility be awarded. In Russia the Emperor has appointed two commissioners, one for the north and one for the south of his gigantic empire. Only three governments decline to have anything to do with it These are Turkey, Rome, and Morocco. Nevertheless some superb works of art from Rome are expected from individual exhibitors. Nothing is expected from America. The Commissioners communicated with the Federal government some time since, but the usual notice has not, we believe, been sent round to the Governors of each state, as it was not thought wise to do so in the present rabid temper of the Northerners. As a set-off to the secession of Turkey, the government of Egypt is exerting itself warmly; so that, on the whole, all is going well, and promises an even greater success than that which attended our first great international effort in Hyde Park.—*Times.*

Norfolk (England) Agricultural Society.

We cull the following remarks from the speeches at the dinner of this Association, recently held at Swaffham, which will be found full of interest to Agriculturists generally:—

The Chairman (Mr. Hammond) in giving the toast of the Judges of short-woolled sheep, observed:—He believed that Providence, or the Almighty, or whatever name they might choose to use, had given certain localities to certain animals; and he knew it to be a fact that the improvement of almost any animal in its proper locality might be carried to a point which would make the animal a most valuable one. Take, for instance, the West Highlanders of Scotland. He remembered when those animals were of a very moderate description; left to starve for about four years, they were at the end of that time introduced to the south of England. If you put them into a yard they killed all the pigs; if you treated them properly and put them into the grazing lands of Nor-

thamptonshire—such a place as Oxton Field—in about five months they returned you a very fair rent for your land. He took the West Highlanders as the wildest sort of Scotch animals which could possibly be selected; but it was the same with the Irish. He remembered well of that district when there were animals which probably we should now despise, with horns almost as long as that (suiting the action to the word, and stretching out about a yard on each side). London at that time was almost supplied with beasts from that district. Mr. Keary, as a Northamptonshire man, would bear him out in what he said; and he must repeat his belief that there were no animals peculiar to any district in England which could not be improved by attention and careful arrangement between the male and female. Therefore if they had got a good breed of stock, let them keep to it. (Hear, hear). With regard to the gentlemen who had come to judge the Southdown sheep, he, as an exhibitor, felt in a wretched position. His object in sending sheep to the meeting was to show what a miserable beast an animal was which was left in a state of nature (laughter); although, as almost the largest farmer in the room, and having almost the largest flock in Norfolk, he bred sheep which fetched a very good price in London in the spring. Whether the grease administered to the min the six months previously to their arrival here was any benefit to them he would not say—he thought that particular article administered to them in the shape of cake would pay more money, but it was a matter of taste.

Lord Walsingham said, with reference to the remarks which had fallen from his noble friend upon the subject of breeding, he had no hesitation in stating his opinion. If regard was paid to the principles upon which all agricultural associations were founded, viz., the obtaining the largest amount of meat with the smallest amount of bone and offal, it would be seen that no animal in its own class had been so successful as the Southdown. It might be very true that a farmer might make a very good profit out of a half bred animal; but if he had not two well-bred stocks to go to, what would be the character of his half-bred? The worthy Chairman had suggested a variety of operations through which an animal passed before he became perfection; and he would not say that there was not some truth in what Mr. Hammond had stated. Other persons complained that some of the animals exhibited at agricultural shows were too fat; but as an aptitude to fatten was a proof of a breed being a profitable one, he should like to know how it would be possible if animals were shown in the state in which Mr. Hammond said he shewed his, viz., to show how thin and miserable they were, for any man to say that they were animals which if they had been properly treated, could have been brought to anything like perfection. Some animals had an extraordinary tendency to fatten. Only four or five days since his excellent steward sent him a note, in which he wrote, "I am exceedingly sorry to inform you that our prize ram is dead; he had such an aptitude to fatten, that though we tried as hard as we possibly could to keep him down, we could not prevent his fattening too much. I thought he never would come to the show, and he is gone dead." Unless you absolutely starved some animals, you could not prevent them from fattening.

The Chairman said that he agreed thoroughly with his noble friend that to secure a well-bred animal you should go to two good breeds, for nothing bred an animal which came so soon to hand as a well-bred long-woolled sheep put to a Down ewe. He did not believe any man in Norfolk would say this was not the case. Some men were satisfied with great overgrown, long-legged, lathy sheep, but he saw a very eminent salesman present, Mr. Collins, and he put it to him whether a very long leg entered into the commercial part of the business? whether a good back was not preferable to a long leg? and whether a sheep crossed between two legitimate crosses was not a better thing to deal with in the Metropolitan Market than a lanky sheep with a rigid back bone, looking more like a tup deprived of the organs of generation late in life, which though respectable and useful in itself, did not attain to the full beauty of the animal. He agreed with the noble lord that the aptitude to fatten was a grand desideratum, but when a premium was proposed for animals not separated from the flock till a certain day, he could not bring himself to believe that any man could be fool enough to bring 40, 20, or 15 score ewes into the state in which they had seen 20 ewes exhibited that day. He could only say that in his case the destination of such animals would not be to the amorous proceedings of the tup, but rather to the mercantile proceedings of his friend below. There was no accounting for tastes, and no accounting for the quantity of pounds some men would throw away to win five.

Mr. Torr, the great Lincolnshire farmer and breeder, observed:—With regard to their home-breds, he saw in them a very marked excellence; he had always been one of those who advocated not improved breeds so much as the improvement of breeds natural and congenial to a county. Of the polled cow class, he declared without favour or affection—being a short horn breeder himself, and having a pretty general knowledge of the aboriginal breeds of the country—that he never saw in his life a more perfect specimen than Mr. Oliver's cow. If this breed was congenial to the climate and lands of Norfolk, why should they not cultivate it? The cow which he mentioned might be made a mine of gold. She might produce, if well crossed by good and compact bulls, a breed which might be most successful and valuable. It was not only the best breeds which were of the most value abstracted-

ly, but a great deal more might be done by improving breeds congenial to the climate than by puffing up one breed against another. He was a thorough-bred shorthorn breeder, and therefore they would receive this remark as quite unprejudiced. Shorthorns were best adapted to the north of England, as they could be got up at a much earlier maturity, and the inhabitants of the north did not care so much for the London market as to the value per pound, as they got more pounds for consumption. If it was found that in Norfolk that they had a home breed which could be got up with advantage, just as in North Devon they had a breed adapted to that climate, let them keep to it by all means, and they were sure to succeed; but let them not fall into the false economy of breeding merely class against class, a course which was not to be supported upon the true principles of breeding. Let every man try in his own circle of breeding to improve those animals which had been placed in his hands by nature. If he found them not congenial, let him import others, but let the importation be from an original stock. They had in Norfolk Highlanders crossed with Norfolks; whether it was to their advantage in paying their rents he would not say; but he believed they would do more by improving that which nature had given them than by seeking by violent crossing to abrogate the principle which God had laid before them. Violent crossing might pay for a certain time; but he believed it to be decidedly wrong in principle; for one should try to improve nature, and not to alter nature. The northern sheep called the Teeswater had become obselete; the old Lincolnshire he was glad to say were obsolete, and the large horned Norfolk were obsolete also.

The CHAIRMAN next proceeded to direct attention to the horse classes, and observed that some Suffolk cart horses were deficient in their feet, although if a horse had to pull a large weight, it was a very important consideration that its hoofs should be strong, that its feet should be fully developed, and that they should be put on exactly in the right way. He saw a great improvement in the horses which had been exhibited that day, and if he could have found the gentleman to whom they belonged, he should have tried to have bought one or two animals. He supposed, however, that nobody sold a horse which could win a prize, and he went away with his money in his pocket. Well, there were worse things than that (laughter). The judgments given were, he believed, founded upon sound and true principles, and they were much indebted to the judges for marking by their decisions what was desirable, and what was to be avoided. A horse might be made to look uncommonly handsome, but unless his lower extremities were made in the right way, and unless his feet were strong in proportion to his body, you would merely have a very large animal to stand still, and a very slow animal to go on. What they wanted with good roads was a quick stepping animal, with good lower extremities, strong feet, and a certain amount of action. Every man thought he had got the best horse in the country, and as for the old mare, there was no mistake about her (laughter). He did not mind in the least giving, in his quiet independent sort of way, an opinion or advice; but if there was one subject upon which he would rather not give an opinion, it was riding horses. The fact was, a great deal depended upon the rider. In the case of one man's horse, the rider might be a very good one, in the other he might be a great brute, and the man who could discriminate which horse was most likely to make the most money in the horse market, was the man to decide which was the best riding horse. With some people a horse whose tail went over his back, and whose feet went over his nose, might be an uncommonly popular one.

The CHAIRMAN observed that he had acted for four years as steward of the implement yard at the meetings of the Royal Agricultural Society, and as he had paid much attention to the subject of implements, he would make a few hastily improvised remarks upon it. The topic was one of great complexity, and one which ran counter to the prejudices of many farmers He remembered when the implements exhibited at the Royal Agricultural Society's meetings did not exceed in number those exhibited to-day, and had not one-twentieth of the practical value. Very few could appreciate the difficulty, expense, disappointment, and trouble involved in bringing a good agricultural implement to that sort of perfection which rendered it fit to be put into the farmer's hands. Exhibitors of implements had to contend with two great difficulties.—Every labouring man who had been in the habit of working with the two old simple implements, the plough and the harrow, looked upon every new implement with a feeling of the greatest possible contempt. When he (Mr. Hammond) had been unfortunate enough to buy a new implement, he had not half done his business, for he was compelled to devote a very considerable amount of time to its right application; and having arrived at the advertised use of the implement, he had then to set to work to discover how many more uses it might be applied to. His friend, Mr. Garrett, whom he saw present, would also tell them that nothing was so difficult as to introduce an improvement among farmers when they did not appreciate it, though it might do the work better than it had been ever done before, it was something new, and they hated it accordingly. He remembered perfectly well when the thrashing machine was considered an innovation perfectly inapplicable to this country, and when the labourers thought it would take the bread out of their mouths: now implements had been improved so much, that it was a monstrous difficult thing in harvest time to get a man into a good sweat (laughter). He contend-

ed that on those who bought improved implements the onus rested of making them do all they were capable of doing. It was a difficult thing to talk to farmers. He could talk to them in a certain way—about hounds, or the cultivation of their land; he could hear them praise of abuse their neighbours, although he must say the abuse predominated (laughter); but whoever went out of the common path must submit to that sort of obloquy, which every innovator must expect.

Trial of MowingMachines at the Model Farm. Glasnevin.

On Wednesday last, a trial of mowing machines was held at the Model Farm, Glasnevin, on a fine piece of Italian ray-grass, kindly set apart for that purpose by Doctor Kirkpatrick, the head agricultural inspector and superintendent of the establishment at the Model Farm, and Mr. Boyle, the farm manager. Though of two years' standing, and also the second cutting for the present year, it was a very fine crop, lodged in some parts, and just in order for hay making, weighing, after being cut, 10 tons 8 cwt. 7 stone per statute acre.

The machines tried on this occasion were Wood's one horse mowing machine; width of blade, 3 feet 6 inches. Price £20. Toole and Co., 41, Westmorland-street, agents. Next, Burgess and Key's one horse machine, 3 feet 6 inches blade. Price £22 10s.; belonging to Kennan and Sons, Fishamble-street. Samuelson's two-horse mowing machine; width of knife, 4 feet 6 inches; under the directions of Mr. Cornes, Mr. Samuelson's agent. Price as mower, £23, and as reaper, £26; and Burgess and Key's two-horse mowing machine, by Kennan and Sons. Price £35; width of knife 4 by 6.

The first was Woods', a very light and elegantly constructed machine, in which not an inch of wood nor a pound of iron was used that could be dispensed with. It had been in use at the Model Farm for several days previously, under the sole management of the pupils of the establishment, and the work left after it was well done, cutting close and even. At this trial it seemed of light draught, and cut at the rate of $1\frac{1}{8}$ statute acre per hour. Burgess and Key's one-horse mower was the next on trial. Its knife was also 3 feet 6 inches long; it is a much stronger built machine and seemed to require more power; however, it also cut at the rate of about $1\frac{1}{8}$ statute acre per hour, cuttting close and clean.

Next came Samuelson's two-horse combined mower and reaper, but adjusted as a reaper; knife $4\frac{1}{2}$ feet long. It cut extremely low and clean, at the rate of $1\frac{1}{2}$ statute acre per hour. Next came Burgess and Key's two-horse mower, knife $4\frac{1}{2}$ feet long, cutting at the rate of $1\frac{1}{2}$ statute acre per hour. It also cut extremely low and close; in fact, no man with a scythe could cut so clean as any of the machines operated with: but the general opinion seemed to be that Wood's was the best adapted for the generality of farmers, from its lightness of draught; that Burgess and Key's two-horse machine seemed of ligter draught than Samuelson's; but that the latter cut the closest. Further and more continuous trials on old meadows are still required to test the exact relative powers of the several machines, which we hope at some future day may be effected.

We must not omit stating that Mr. Dawson, who conducted Wood's (Cranston's) machine, got three of the pupils to draw it, which they did with comparative ease; and we have no doubt but that a good, stout poney would be fully equal to the work.

On the following day Burgess and Key's two-horse and one-horse mowing machines were tried at Mr. W. S. Purdon's, near Dundrum, on old meadow, some of which was very heavy, and well calculated to test the capability of those machines. Both machines executed the work well, but especially the two-horse one, which cut about an Irish acre close and clean, much better than any scythes-man could do it, when the rain put an end to the trial. Those present, amongst whom were several first-rate mowers, were astonished at the excellence of the work performed. —*Irish Farming Gazette, June* 22nd.

Profitable Farming.

The *New England Farmer* reports an interesting discussion by the Legislative Agricultural Society at Boston, on the subject of the most profitable kinds of farming in different parts of the State. Mr. White, of Petersham, said a farmer in Barrie kept 16 cows, that produced each 440 pounds of new milk cheese, at ten cents per pound—which is over seven hundred dollars for the sixteen cows. Mr. Proctor, of Danvers, said that in Essex county, men who cultivated from two to thirty acres, made as high as forty dollars per acre by thorough plowing and manuring freely, mostly by raising vegetables. Onions were raised largely before the insect was known—many had cleared over one hundred dollars per acre. Onions do not exhaust the land, and successive crops for 20 years had been raised, and at five hundred bushels per acre. Hay had proved profitable, as well as beets and carrots; and within a year 30 bushels of wheat had been obtained from an acre. Mr. Bushnell, of Sheffield, was strong in favour of sheep husbandry; but its profits had been greatly reduced by the ravages of dogs. Animals in which Spanish Merino blood prevailed, produced $3\frac{1}{2}$ to 6 lbs. of washed wool per head, usually selling at fifty cents per lb. He had been engaged in the sheep-raising for thirty

years, and had increased the value of his land fifty per cent. by it. Land which cannot be plowed may be enriched on any desired spot, by placing there a movable structure for shelter, running on wheels, under which salt is placed, and where the sheep will lie. Paoli Lathrop said that along the Connecticut valley, winter and spring wheat, broom-corn, and onions were profitable. He preferred raising sheep to cattle; said that a pound of mutton could be raised as cheaply as a pound of beef, the cost of grinding grain being saved by the perfect digestion of the sheep. Mr. Sears, of Barnstable county, said that their best paying crop was cranberries; and he mentioned as an exception, not as a rule, that $1,750 had been realized in a single season from an acre of land; and a cranberry meadow, sold in the spring for $1,500, cleared in the same year $1,200. The average yield he thought about $500 per acre. Josiah Quincy, jr., said the best crop he had found was the manure crop. He raised 320 tons of hay, kept 80 cows, and mixing his manure with swamp muck, made 100 cords of compost per month for his grass lands. C. G. Davis, of Plymouth, stated that 4½ acres of grass, behind a livery stable, had received the manure of 15 horses, top dressed in November, and had yielded 26 to 34 tons of hay per year, last year cutting 26 tons the first crop, and 7 to 10 the second—(over 7½ tons per acre for the two cuttings.) Simon Brown said that the fruit, milk, and vegetables afforded large returns, near the cities. Cows had been so much improved as to nearly double in value within fifteen years.

The Royal Agricultural Society of England. Prince Albert President.

Our readers will learn with real satisfaction that his Royal Highness the Prince Consort has consented to act as President of the Royal Agricultural Society for next year, when the great show will be held in the Regent's Park. The election will be most likely announced at the general meeting of the society on Wednesday.—This is on either side no empty compliment, but a really auspicious omen for agriculture. The advance of the art well merits such countenance, and the Prince's own tastes point at once to him as the proper patron of such an occasion as the show of sixty-two promises to become.—The world already knows of his Royal Higness's success as an exhibitor of stock; but it is not every one who has had the delightful privilege of inspecting the Park Homesteads at Windsor, or of seeing and hearing how thorough an interest both her Majesty and her Consort take in the different phases of the home, the Norfolk, and the Flemish farms. With an enlightened and enlarged mind well fitted to his position, the Prince gives everything in any way worthy of his attention a fair trial. We see this alike in the breeds of stock he cultivates and the different descriptions of machinery he employs.—There are those first favourites, the little Devons at one farm, the Herefords at another, and the short-horns at a third; with, moreover, an especial place for the dairy. The day on which we had the pleasure of going round there was a new grass-cutter on trial; while one of Smith's steam-cultivators has been at work at Osborne, and another of Fowler's at Windsor. Both the Queen and the Prince make it their care to see such inventions well tested, and the Royal pair are equally zealous in marking the improvements of the animals. The Prince is known to be a capital judge, and there is not a beast but that he has the history and value of at his command. With, then, his great abilities and natural predilections, we may repeat that his Royal Highness's acceptance of the president's chair should inaugurate a great year for agriculture. It will be the especial duty of the society to make this worthy of him. There is an *eclat* already attached to the meeting that needs but careful cultivation to grow and thrive as time progresses. —*Mark-lane Express.*

British Wool.

At a meeting of the Council of the Royal Agricultural Society of England, held in London, on June 24th, Mr. Caird, M. P., read the following paper on British Wool, illustrated by samples from various parts of the United Kingdom. Professor Wilson, and other distinguished agriculturists, took part in discussing various matters connected with the subject embraced by Mr. Caird's paper; the substance of which we purpose giving in our next issue. As the culture of sheep is extending in several sections of this Province; and the demand for wool increasing, our readers will find much that is interesting and suggestive in the subjoined report:

Mr. Caird said: The subject that I venture to bring before the Society to-day appeared to me to be one of considerable interest to the agriculturists of this country, otherwise I should not at so late a period of the season thought it necessary to take up their time; and as I have been very much engaged, I think probably I may condense my observations better, by reading a short paper that I have written, which embraces facts, rather than entering into any discussion upon the subject. There has been an immense increase in the importation of foreign and colonial wool during the last 20 years, yet the price of British wool has not only undergone no diminution, but its production continues to be one of the most profitable branches of our agricultural industry.

The total importations have increased from 45-000,000lbs, in 1842, to 133,000,000lbs in 1859; of which our own colonies and possessions furnished 82,000,000lbs. (I am giving you the last statistical account that we have furnished to April 1859.) From Germany and Spain there has been in that period a diminution of over 4,000,000lbs; but from other European countries, chiefly Russia, the low countries of Denmark and Portugal, there has been an increase of 20,000,000lbs. From our own colonies and possessions the increase during that time has been as follows, in round numbers—from Australia the increase has been during 20 years from 13,000,000lbs to 54-000,000 lbs; from South Africa, the increase has been from 1,000,000lbs to 14,000,000lbs; from the East Indies it has risen from 4,000,000lbs to 14,000,000lbs in the year, that is between 1842 and 1859. These figures show an increase so enormeous that we cannot but be amazed that the price of home grown wool continues, in the face of such imports, to be remunerative. But if we attempt to estimate the total produce of the United Kingdom, the result will appear still more remarkable. The number of sheep in the three kingdoms may be taken at 30,000,000. The total produce of wool may be estimated at 120,000,000lbs. In 1842, the home-grown wool could not have exceeded 100,000,000lbs. A comparative statement of the supply will stand thus: In 1842, the home and foreign supply amounted to 145,000,000lbs; in 1859, the home and foreign supply amounted to 253,000,000lbs; making a total increase of 108,000,000lbs, which shows an increased supply in the growth of one of our great staples of manufacture to the extent of nearly 75 per cent, and this not followed by any diminution of price to the home producer. This has been caused partly by the increasing prosperity of the woollen manufacturers at home, but partly also by their increase abroad. France alone took from us, in 1859, 6,000,000lbs of British wool, and upwards of 12,000,000lbs of colonial wool. She took the larger portion of Irish wool, and France and other foreign countries relieved our market on the whole, in 1859, of 28,000,000lbs of wool, which was equal to three-fourths of the whole produce of Scotland and Ireland. The practical point to which I am anxious to direct your attention is the change that has taken place in the relative prices of different kinds of wool, and the importance of a knowledge of this to the British farmer. The competition to which we are chiefly exposed lies in the shorter and finer qualities of wool. From Australia, the East Indies, South Africa, and South America, we received, in 1859, upwards of two-thirds of our imported wool. And the whole of that region, which will most probably continue to increase most rapidly in its produce of wool, is unsuitable to the production of the lustrous long wools which are now in great demand. The British islands produce this kind of wool in the greatest quantity. A small portion comes from the North of Europe and Ireland; but hitherto we have held in our hands almost a monopoly of this supply, and as nature has given us this advantage we ought to make the most of it. The short fine wools of this country, such as the Down or Cheviot, formerly sold at double the price of Lincoln or long combing wool. When the colonial wool trade had no existence, in 1811, Cheviot wools were worth 2s. 6d. per lb, when the Lincoln brought no more than 1s. per lb. But in proportion as the market has begun to be supplied with fine Australian wool, the relative values of the two have greatly altered. In July 1851, the Lincolns had reached within 2d. per lb. of half-bred Cheviots, and, in 1856, within 1d. per lb., and in May, 1861, the Lincoln long wool was the dearer of the two. The change in price as between the Down and Lincoln wools has been equally great. The two kinds of wool are used in the manufacture of different classes of goods. Cobourgs (this is information that I received from an eminent manufacturer in Yorkshire, having no personal acquaintance with the subject myself) are made from Australian, Merino, Down, and other fine short wools, of which there is a constantly increasing supply. Orleans and Alpacas are made from the lustrous long wools for which there is a constantly increasing demand, and a limited area of supply. In the short, fine wools there is no lustre whatever; in the long wool lustre is a most important quality. Alpaca and mohair are introduced to a slight extent to produce lustre in the cloth; but as the supply of that description of wool is only two per cent of the whole import, it will be obvious how little that will affect the price of home-made lustrous wools. There is a great and increasing demand for orleans and mixed alpacas, and of lustrous goods in which the object is not merely fineness to the touch, but a lustrous appearance. Beside the Britsh demand, there is an increasing French demand both for that kind of wool and for the goods manufactured from it. The French manufacturers already take the most of the long, lustrous wool of Ireland. I have been favored by my friend Mr. Foster, M. P. for Bradford, with specimens of the various wools at present used by the manufacturers of the West Riding, with the prices affixed to each, and which I now beg to lay on the table for the inspection of the Society. The practical conclusion to which I arrive is that the British wool-grower should develope as much as possible that kind of wool which is least subject to foreign and colonial competition, and for the production of which he fortunately possesses the most suitable soil and climate, and the supply of which can be best increased by good farming, liberal feeding, and with a large frame of mutton, as well as a heavy fleece of wool. For this purpose the best cross probably that can at present be adopted on suitable soils would be by using the improved Lincoln or Leicester ram, in which the desirable qualities of length, lustre,

strength and fineness of wool seem to be best combined.

That paper contains all the material facts that I desire to bring before the Society for their consideration, and for such discussion as it may probably lead to. I imagine that the subject is one of considerable importance, and that upon careful examination it will be found well deserving of the attention of the practical farmers of the Royal Agricultural Society of England.

A Thousand Weeds at one Pull.

A single pigweed (*Chenopodium album,*) if left undisturbed, will ripen more than ten thousand seeds, each capable of producing a successor. The seeds of the dock, sometimes number over thirteen thousand on a single plant, and the toad flax (*Linaria vulgaris*) leaves provision for more than forty-five thousand plants the following year. Burdock will multiply twenty-one thousand fold, and the common stinging nettle (*Urtica dioica*) ripens one hundred thousand seeds. Scarcely a weed comes to maturity without scattering from one thousand or more seeds to injure crops and annoy the cultivator. This is not mere guess work, for painstaking investigators have actually counted and calculated the increase. A single pull at the commencement of the season, will destroy the whole progeny.

It should be remembered that seeds mature sufficiently to vegetate before they are perfectly dry; and again, that the seeds are ripe on one part of the plant while there are flowers on another. Hence it is not safe to wait till the flowers are gone before pulling up weeds. Attack them before they blossom. Pull them up, or, if annuals, cut them off when quite green; and spread them in the sun to die. He who allows the weeds to grow in his potato field until he harvests the crop, is quite sure to sow many millions of seeds for next year's trouble.

This much for annual and biennial weeds. Perennials, like the dock, daisy and the thistle, should be treated with greater vigor. Cutting off the tops once will not suffice. Digging them up one by one, root and branch, is the only effectual remedy. Where they have invaded a whole field, plow up the land in the Fall, leaving many of the roots exposed to the action of the frost. Plow again in the Spring, taking pains to pick out and carry off evey root that appears Devote the soil to some hoed crop, and let it be repeatedly and thoroughly cultivated through the Summer, waging war upon the pests without any relenting. If they are cut off *below ground* several times in the Summer, they will grow weaker at every decapitation. The leaves being the lungs of plants, are essential to their breathing, and if this important operation be stopped, they must soon give up the ghost. Remember every extermination of a weed this year, is the death of a thousand of the future crops.—*American Agriculturist.*

Roman Oats on English Farms.—In a field on the farm occupied by Mr. Binks, at Peppermoor, near Alnwick, some ancient encampments long existed which tradition ascribed to the Romans. The lapse of time and the spirit of agricultural improvement gradually obliterated almost every trace of them ; and about a year ago the last of the whins, which time out of mind had covered the ground where the Roman legionaries had trodden, were cut down. and the land plowed and sown with barley. When the barley was ready for the sickle, Mr. Binks was astonished to observe several heads of strange looking oats among it. Some of them were unusually tall and strong, with long branching stemlets, while others had globular heads resembling the seed of the onion. Mr. Binks collected no less than 75 varieties never seen in the district before. He has sown the seed, and intends to exhibit a collection of them at the next show of Alnwick Horticultural Society. The place, as it has been conjectured, has been a cavalry camp, and the oats, which were perhaps ripened under other skies, after lying covered with the debris of the camps for probably 1,500 years, will again shoot into cereal beauty, and may add one or more permanent varieties to the stock of the English farmer.—*London Globe.*

Law to Protect Fairs.—The Legislature of Ohio has passed the following enactment:

"That it shall be unlawful for any person to exhibit or show any natural or artificial curiosity for any price or gain, or set up to let or use for profit any swing, revolving swing, flying horses or whirligigs, within one-fourth of a mile of the fair ground of any agricultural society in t is state, while the fair of such society is being held therein, unless such person shall first have obtained the written permission of the board of such agricultural society to make such exhibition.

"That if any person shall violate the provisions of this act, he shall, on conviction thereof, be fined in any sum not less than one nor more than one hundred dollars; and all moneys derived from the violation of this act shall be appropriated to the support of common schools."

The Management of Swine.

The following remarks were made by Mr. Stearn at the Farmers' Club of Framlingham Eng., April 22nd. We copy from the Gardener's Chronicle :—

I have had experience in management of pigs

a good many years. I exhibited a sow and pigs at the Framlingham show as far back as 1847, and gained the prize ; they were then considered superior to everything that had been seen in this neighbourhood, and many said I should never produce another lot so good. But as Mr. Bond says, "we keep progressing," for at the Framlingham show last year I exceeded the former very much in weight at the same age. The same remark was then made again, but the two lots I showed at Birmingham and Smithfield were heavier still at the age ; and now I suppose I may make up my mind I have got to my furthest in that point, as I have raised between 14 and 15 stone, 14lbs. to the stone, at the age of between five and six months, dead weight; and between 8 and 9 stone, 14lbs to the stone, live weight, at between 12 and 13 weeks old ; and I think I have now in the breeding of that animal arrived as nearly at perfection as I could reasonably hope. I find that the profit or loss of the pig rests on the quality of the stock, and it must be kept in mind for what purpose the animal is intended, whether for bacon or pork, if for bacon flitches, you must choose a large kind, such as Berkshire, but if for pork, the small kind is most desirable, such as the Suffolk or Leicester, which are very similar animals, and every judicious breeder will have to take into consideration many circumstances in choosing a breed of pigs. The intent and purpose of breeding is profit. To ensure the greatest amount of profit, it would be well to consider the position in life of of the population resident near one's own locality; the proximity to a good market, and the kind and quality of meat necessary for its supply. Formerly farmers had no means of conveying their swine to a favorable market, except the tedious one of driving them, or the expensive one of conveying them in carts. There is a pig called the improved black Suffolk which many persons prefer to white, thinking they are more hardy, but I have fairly tested the thing of late, (which I suppose most present have been eye witnesses to) and proved that the white will exceed the black as far as early maturity is concerned, and of course early maturity is where the profit is gained ; and I find the better the quality of breed, the more lucrative it becomes, much less food being required. Now for our white Suffolk breed. In choosing the sow and boar, the chief points are a a smallish head, with short snout, wide chops, the ears rather small and thin, ends sharp, pendulous, and pointing a little forward, broad and deep chest, round ribs, long in the body and short in the leg, the haunch or thigh dropped almost to the hock. back broad, straight or slightly curved, shoulders and hams thick, and the neck to rise well behind the ears, small bones in proportion to the flesh, the hair to be long, thin and silky, tail small and curled. Strict attention to these points cannot fail of perpetuating good stock. Here I must add my surprise how careless breeders are in selecting the boar for their sows ; if there happens to be a good animal within a short distance for the going to which half-a-crown is charged, they will often send double the distance to a thoroughly bad bred ugly brute, for the sake of the gain of a shilling; whilst the apparently paltry gain is so much looked after, improvement is out of the question. As to the time for breeding, the sow should be from 10 to 12 months old, and the boar from 8 to 12 months. I however find that very few people will keep them so long, but breed them much earlier, which very often prevents their growing to the proper size, or acquiring sufficient strength for breeding. I think good sized sows are best for breeding, and more likely to have a good number of pigs. Great care should be taken not to have one with less than twelve paps, for it is observed each pig selects a tit for itself. I consider twelve good even pigs to be sufficient for any sow to bring up. The sow I exhibited at Canterbury last summer has brought up fifty-one pigs in four letters without losing one. As far as my experience goes, the time of gestation averages about 113 days, or 16 weeks and one day. Two good litters in a year are all we ought to expect. When a sow is in pig she ought to have liberty and plenty of exercise. The boars kept for stock should be confined in a shed with roomy yard; if allowed to roam about, you are likely to get wrong in your breed. In managing the sow at the time of farrowing my practice is as follows: To have a man with her to attend to her ; for it is absurd to have all the trouble and expense of keeping a sow, then at the most particular time to leave her alone to take her chance. In my idea there is not sufficient attention paid to the construction of piggeries ; I have seldom seen one which I did not consider too small, except perhaps just for fat pigs, which of course, do not so

much signify for the less a pig put up for fatting moves the better. But the farrowing pen ought to be large, to allow the sow plenty of room, and likewise to admit of rails being placed round the side, so fixed as to prevent the sow lying on the young ones. These rails should be made to shift according to the size of the sow, I think in height from 8 to 12 inches, and extend out from the wall, about nine inches, having the supports carried up sloping from the side, instead of straight up from the floor, then when the sow lies down there will be no likelihood of her squeezing the pigs, as there is plenty of space left for them to pass between her and the wall, for nine times out of ten that is where the mischief is done, as sows invariably like to lean against something when they lie down. I have recently had a hundred pigs, without losing one from being crushed. Each place ought to be, at least, from 8 to 10 feet square, and the best floor, I consider, is asphalt. No damp or scent can rise from that; I tried boards, bricks, and almost everything in the way of floors; most would say boards are best but I think I can convince you to the contrary. If you will consider for one minute, they cannot be healthy; for if the boards are placed close, of course the moisture will stand, and the boards become saturated; and if a space is left, the refuse litter will go between, so it will become one mass of putrid matter underneath, quite level with the floor, whatever the depth may be; for what passes through will absob the urine and is likely to bring on many diseases. But I think it is well in the cold weather, to lay down a false lattice floor on the asphalt, so it can be taken up once a week, and everything swept from under, for two or three weeks, when the pigs are very young. I have the beds attended to and fresh littered every morning, for I find the cleaner the place is kept, the better the pigs thrive. The floor being washed once or twice a week, everything runs off, and the asphalt dries in a very short time. There is another great advantage; it does not take more than two thirds the straw it requires for any other floor; for the moisture appears to run under the litter, without wetting it so much, as it is laid a little on the slope; what is taken from the inside, serves as litter for the outside, which ought to be paved in some way to prevent the pigs from rooting. By following this plan, the manure is made very regular and good. A tank should be made just outside to receive the drainage from the pounds, the building to be troughed to take off the rain water, to prevent the manure being washed. The pens ought to be so constructed as to be closed up in cold weather, and well ventilated in warm. At the time of farrowing I allow a very small quantity of litter cut short, and have a hamper placed in the pen, with a little straw at the bottom, and also an old blanket. I put a slip or partition about 2½ feet high across the pen, to prevent the sow getting to the hamper; as the pigs come forth put them into it and cover them up, until the sow has done farrowing, after which put them to her and let them suck. When done put them back in the hamper, give the sow a little warm milk and bran and whilst she is eating this, have the bed attended to, by removing all the wet straw, &c. Add a little fresh litter cut short, then when the sow lies down let the pigs go to her again; by pursuing this plan there is very little danger of losing them, for I believe one-third are lost for the want of proper attention. I always give the man 6d. per head for all the pigs he can bring up to a fortnight old. I find this much the cheapest plan, for then there is no fear but he will see to them properly, and attend to them in the first instance, as well in the night as in the dry. How often do we hear people complain of the sow eating her own young; therefore steps ought to be taken to prevent her doing so; for when once a sow does that she is of very little use for breeding purposes. If you will allow me, I will explain what I have found to be the cause. In some litters, the side teeth are much longer and sharper than others; when this is the care, and the pigs begin to suck, they bite and scratch the paps, and punish and irritate the sow to such a degree, that it brings on inflammation, and the sow becomes mad with rage, she throws some one way, and some another. At last she bites them, and if she once draws blood, she will begin to eat them. Now the way to prevent this: when the pigs are a few hours old, I have them taken away in the hamper, so the sow cannot hear them, and nip those teeth out with a pair of pinchers. I should have lost a lot of thirteen some time since, if I had not pursued this plan, for the sow was as mad as possible, threw the pigs all over the place, and I had great difficulty in taking them away, for she would not allow any one to approach her. As soon as I had drawn the teeth, and

put the pigs back, she was as kind to them as possible, and perfectly docile. I think about eight weeks old is a good time for weaning the pigs, and I like to have them operated upon a short time previous.

Horticultural.

Fruit Growers' Association of Upper Canada.

A meeting of this association was held at Hamilton on Friday, the 19th day of July, 1861. The President, Judge Logie, in the Chair.

The following members were present: Geo. Leslie and D. W. Beadle, Vice-Presidents; Dr. Hurlburt, Secretary; J. A. Bruce, Treasurer; Dr. Craigie, and Messrs. Arnold and Whitlaw, of Paris; Smith, of Grimsby, and Carrol, Holton, Freed, McNab, Laing, and D. Murray, of Hamilton.

The association then entered upon the discussion of small fruits, beginning with currants.

1*st.—Red Dutch Currant.*

Mr. Lesslie said that it was an improvement on the old currant; more like *Red Grape* than any other; it is stronger in wood and foliage than the old English; a good bearer, superior to the old English; pruning is everything in the currant; recommends it for use as one of the very best currants.

Mr. Holton would not recommend for cultivation what is commonly called the Red Dutch Currant, (I mean the common red currant of the country.)

Mr. Arnold agreed with Mr. Holton, and considered that the Red Dutch was the common red currant, and that the variety spoken of by Mr. Leslie was the common red currant improved by good cultivation.

Mr. Leslie was very decidedly of the opinion that the red Dutch and Common Red Currant were two distinct varieties; the Red Dutch is a very superior currant, has a strong low growth; the Common Red is a more slender shrub, and grows higher.

Mr. Freed agreed with Mr. Leslie that the Red Dutch is one of the best currants of the country. (Mr. Freed in the evening produced branches of Red Dutch, Cherry, and Prince Albert Currants.)

Mr. Murray agreed with Mr. Leslie and Mr. Freed, and considered the Red Dutch the best currant for general cultivation.

Mr. Beadle said that the Massachusetts Pomological Society recommend the Red Dutch as the best variety.

Dr. Craigie spoke of the importance of pruning currants, and referred to two kinds of pruning he had seen in Scotland, many years ago. One mode was by constant shortening in, the branches that were allowed to stand produced large knots or lumps from which an abundance of fruiting branches or spurs issued, and which produced a very large crop of fine fruit, the other mode was to train the plant to a considerable height, making the top grow over a trellis and hang downwards.

2*nd.—Red Victoria Currant.*

Mr. Arnold said that it is a late currant of good size; good flavour; and a very good bearer.

Mr. Holton said it is a very valuable currant, good quality, fair size, and a profuse bearer.

Mr. Leslie,—It is a good late currant, a week later than the Red Dutch, but not so good.

Recommended for general cultivation.

3*rd.—Red Russian Currant.*

Mr. Leslie,—Good flavour, latest of all the currants, ripens the first week of August, medium size, wood stiff and strong, and strong foliage, and a good bearer, has had it for four or five years.

No other member present had this variety. Recommended for further trial.

4*th.—Red Cherry Currant.*

Mr. Arnold,—It is a large very sour currant, good bearer.

Mr. Holton,—A large sour currant; wood large and ornamental—poor moderate bearer.

Mr. Freed remarked that in the spring the buds did not come out well, they appeared to be not fully developed.

Mr. Leslie agreed with Mr. Freed as to the buds being not fully developed in the spring; the wood is tender, but he saw no difference between the acidity of this and of the other currants. A poor bearer, (at Toronto,) but it is a distinct variety, both as to wood and fruit.

Mr. Smith,—It is poor and sour; the largest red currant, a good bearer, (at Grimsby).

Mr. Beadle,—Best market currant; medium bearer, and does not compare with Red Dutch.

Recommended for general cultivation.

5*th.—Prince Albert Currant.*

Mr. Arnold,—It is a good fruit, not so large as the Victoria; wood has a large growth; a good bearer.

Mr. Freed,—It is later by two weeks than the Red Dutch. Wood thrifty and hardy.

Mr. Beadle,—A late currant; the leaf has a yellowish hue, crumpled, and deeply serrated.

Mr. Leslie has grown it for four or five years, has a crumpled foliage, of a yellowish green.

Recommended for further trial.

6 *and* 7.—*Black English and Black Naples Currants.*

Mr. Holton,—Valuable for family use; not a

good bearer; little difference, if any, between Black English and Black Naples.

Mr. Freed,—Black Naples larger than black English, and better.

Mr. Smith,—Black English is superior to the Naples, and better bearer; Black Naples runs wood.

Mr. Beadle,—Black English and Naples same in size and flavor; Black English bears better than Black Naples; but his Black English shrubs are older than his Black Naples. Mr. Taylor, of St. Catherines had the Black Naples larger than the Black English—Mr. Taylor's are on gravelly soil—his, Mr. Beadle's, on sandy loam.

Mr. Leslie—Grows three kinds, Black English, Black Naples, and Bang-up. The Black English is the best for general cultivation; the Naples are larger for size and beauty, is *the* currant, but it is a poor bearer. Bang-up is almost worthless.

Both the Black English and Black Naples recommended.

8*th*—*Ogden's Black Grape Currant.*

Mr. Arnold,—Size and flavor same as Black English and Naples; bunches longer, does not bear well when young—same is true of other black currants. Recommends it for further trial.

9*th*.—*White Dutch Currant.*

Mr. Smith,—The fruit is very fine, and moderate bearer at Grimsby.

Mr. Arnold,—Same as common red currant, but of a different colour; same in flavor.

Mr. Laing,—The fruit is excellent, a prolific bearer.

Mr. Murray,—Fruit much the same as Red Dutch; a good bearer. Recommends it.

Mr. Beadle,—An improvement on the old white; not so good a bearer as the white grape currant.

Mr. Leslie,—An improvement on the old white English; as a table fruit very good; a pretty fair bearer.

Recommended for general cultivation.

10*th*.—*White Grape Currant.*

Mr. Leslie,—There is no currant equal to it.

Mr. Beadle,—The best white currant in cultivation—a prodigious bearer.

Mr. Arnold,—Fruit first-rate; wood liable to be attacked by a borer.

Mr. Murray agrees with Mr. Arnold.

Mr. Smith,—The very best currant.

A branch of the white currant, in fruit, was exhibited by Mr. Smith.

Recommended as the best white currant for general cultivation.

RASPBERRIES AND BLACKBERRIES.

(See proceedings at last meeting of the Society reported in the *Canadian Agriculturist*, February 16th, 1861, page 114.)

1.—*Brinkle's Orange Raspberries.*

Mr. Murray prefers it to White Antwerp.

Mr. Smith has grown it this year for the first time; Superior to White Antwerp; hardy.

Mr. Beadle,—It is a berry of great promise, and a good bearer.

Mr. Leslie has grown it for two or three years; best of all the white raspberries; canes tender; a good bearer.

Recommended for further trial.

2.—*Fastolff Raspberry.*

Judge Logie has grown it for eight or nine years, and has found it hardy, very productive, fruit of fine quality, but soft.

3.—*Belle de Fontenay Raspberry—(Red.)*

Mr. Arnold,—A good crop; later than Antwerp; bears a succession of crops; hardy.

Mr. Smith,—Best variety; two fine crops in one year; hardy.

Mr. Beadle,—Valuable berry; hardy; good bearer; will bear two crops in a season, one on the old canes of the previous year, and the other on the new canes. The September crop will be finer if the old canes are cut away in the spring.

Mr. Leslie agrees with Mr. Beadle.

Recommended for cultivation.

4.—*White Antwerp Raspberry.*

Mr. Arnold,—Best fruit, of the best flavour; canes tender; a moderate bearer.

Mr. Murray,—Good flavor; cane hardy; a good bearer.

Mr. Smith,—Fruit good; cane tender, liable to be killed in winter; should be laid down. All raspberries should be laid down in winter; the canes need no protection but simple laying down.

Mr. Leslie,—One of the best.

Recommended for cultivation.

5.—*New Rochelle or Lawton Blackberry.*

Mr. Smith,—Hardy at Grimsby; never winter kills, a prodigious bearer.

Mr. Beadle,—Berry large; cane hardy, and an enormous bearer at St. Catharines.

Mr. Arnold—Worthless at Paris; winter kills, when it gets into the garden it is difficult to eradicate—those acquainted with the bramble generally consider it the same as the Lawton.

Mr. Leslie,—It does not thrive in Toronto.

Mr. Taylor, of St. Catharines, sent to the meeting, by Mr. Beadle, nine varieties of Raspberry, viz., Brinckle's Orange, White Antwerp, Col. Wilder (white), Belle de Fontenay, Fastolff, Franconia, and Allen; also, the Native White and Black Cap Raspberry.

Mr. Smith, of Grimshy, also laid on the table two varieties of Raspberry and Trollope's Victoria Strawberry; and Mr. Freed laid on the table two varieties of Strawberry.

Mr. Arnold stated that he had this season produced seven bushels and five quarts of Wilson's Albany Strawberry, on a plot of ground eighty feet by twelve feet—bring at the rate of 300 bushels per acre. These he sold at one shilling and six pence, york, per quart, or at the rate of $6 per bushel.

The next meeting of the Association is to be held in the Mechanics' institute at Toronto at the time of the September Show of the Toronto Horticultural Society. The members of the Association to take to the September meeting specimens of grapes, gooseberries, cherries, and plums, &c.

T. HURLBURT,
Secretary.

Hamilton, 19th July, 1861.

Defoliation.

[The principle involved in stripping a plant or tree of its leaves, when it becomes too luxuriant, is well explained in the following article taken from the *Gardener's Chronicle*.]

As an instance of the destructive effects of defoliation let us select some plant well known to be remarkably tenacious of life, as for example Couch Grass, which is one of those troublesome weeds in whose extermination much time and money have been spent, and often in vain, so great is its vitality. This plant consists of a root, which throws out leaves and almost simultaneously under-ground jointed stems or runners, the points of which are sharp and penetrating, white and polished like ivory. The green parts above ground may be hoed over, but the creeping underground runners are still capable of sending up shoots from their joints, and thus a number of fresh plants are originated, so that any given space, instead of containing only one plant, is now stocked with many.

To fork up the whole is easier said than done; and is an operation next to impossible in many kinds of soils, for some of the joints are apt to remain hidden in bits of clods, and when these are softened by warm showers each joint soon takes the opportunity of pushing roots, an upright shoot, and runners which make rapid progress in the well forked over and now pulverized soil. Thus from each concealed joint a vigorous plant starts up, so that this plan for killing it often turns out to be one which facilitates propagation. The green portion of the plant above ground naturally dies down in winter; but the underground runners live, although the soil is frozen round them with a temperature at zero. If in spring their points are turned up in the air, they will burst their ivory-like casing, become green, and develope themselves into leaves. It is true that repeated forkings and careful pickings will ultimately annihilate Couch-grass; but the time thus occupied in thus clearing a rod of ground would in many cases be more than sufficient for trenching an equal extent to permanent advantage.

As has been already observed, Couch withers above ground in winter; its vital part is then under ground; but it is not wholly an underground plant. It cannot always exist entirely below the surface, any more than a whale can live continually under water. Its prolonged existence depends on the green leaves which the roots naturally throw up. These leaves are the organs which elaborate the sap to form the tissues of roots and runners, and that being the case their existence is essentially necessary for that of the whole plant. The roots cannot long exist without being fed by a supply of matter that has passed through the leaves; it therefore follows, that the most effectual means of destroying the plant is to cut of this supply, by keeping the foliage hoed over immediately it makes its appearance. If this is persevered in, the underground portions will ultimately die. Close watchfulness will, however, be necessary, for if the leaves are allowed to proceed for even a week, fresh runners will be formed from new cellular tissues, and will be capable of living till next season independent of foliage, especially if the foliage is permitted to take place towards the end of summer. On the contrary, by prompt though slight hoeings, the destruction of Couch grass, Crowfoot, Bear-bine, and other inveterate weeds will be completely effected at a cheap rate. Whilst other modes of eradication cannot well be carried out in hot weather, the one above recommended may be practised at any time, for according to the principle of privation of foliage, it matters not whether the latter is cut off in wet or in drought. If the plant is not allowed to have any top in the growing season its roots will decay and rot, and that the more quickly if the ground is hot and moist.

From what has been stated it will be evident that by acting on the principle of defoliation we can annihilate the most obstinate of weeds. Leaf removing is therefore a potent operation either for good or evil, and should not be acted upon without great caution in cases where it becomes partially necessary, as for example in the disbudding of fruit trees. Keeping any tree, even the most vigorous, entirely divested of foliage for one or more seasons will certainly kill it; if we only half denude it we may reasonably expect its vigor will be thereby reduced one-half. Now is the time when Peach and Nectarine trees require to have superfluous shoots thinned off, and to those engaged in the operation we may be permitted to say, remember the case of the Couch grass and

bindweed, &c., just related, in which the process of defoliation was carried to the extreme; and when you must now apply the same process to some extent to those trees which you wish to befriend, you will scarcely require being told to be cautious. It should be borne in mind that an animal may lose a large quantity of blood at intervals without serious consequences; whereas the same quantity lost at once would prove fatal. So the trees to which we allude may lose a considerable amount of foliage and still be healthy, provided it is removed judiciously, and by degrees.

In favorable summer weather trees make fresh leaves progressively, whilst those already partially developed acquire greater expansion, so that every day the total surface of foliage is considerably augmented. The increase is progressive unless interrupted by insects or interfered with by the pruning knife. It cannot, however, be denied that the latter or pinching by the finger and thumb must be employed, and defoliation to a certain extent must be the consequence. In the case of wall trees this is absolutely necessary, otherwise there would be three times as much foliage as there ought to be n a given space, and badly ripened wood and fruit would be the result. Many are of this opinion; and some accordingly set to work and at once reduce by shoots and leaves the superfluous two-thirds, thus leaving for the flow of sap only one-third of its wonted channels, the operator never thinking what is to become of the superabundant fluid, or whether it will not stagnate, become putrescent or inspissated into gum, and in either way render the tree diseased. Instead of this dangerous mode, let defoliation be practiced in the manner in which leaves are made, viz., gradually. As it is natural for the trees to have less foliage than it had yesterday, let it not be found at any time in the growing season to have less foliage than it had perhaps a month ago. In short the only way to make the necessary reduction of foliage with safety, is to do it frequently and but little at any one time. Healthy, vigorous, and fruitful trees will then be the result.

The Dairy.

About Butter Making.

The dairy woman cannot do her part well if she do not have the advantage of proper fixtures and implements. A good, cool place for setting the milk in summer is absolutely indispensable, and there is no farm where cows can be kept profitably, that such a place cannot be provided at small expense. The use of spring houses is one of the causes for the good butter of the hilly regions. But a good *spring* house can be made near a well, and often much more convenient, as being nearer the house than the spring. I saw a very nice one, which answered an admirable purpose, and is a model of its kind. The ground was excavated about four feet by some twelve feet square, and a solid stone wall two feet thick, laid in cement, four feet high. The floor inside was also laid in cement, slightly inclining to one corner. The wall was carried up full width four feet, and then an offset of eighteen inches made to the rear, carried up two feet higher, and connecting with the wall to form the foundation. Upon this foundation was erected a balloon frame with eight feet posts, boarded outside and in, and the wall made as tight as possible. Upon the ledge created by the offset a wall about four inches high and wide, is made on the front, by which, being well plastered with the cement, a gutter or vat is made some three inches deep, with a slight descent to the corner opposite to that where the water is introduced. Into this vat the fresh milk is set while warm, and cold water conducted into it from the well. The milk cools rapidly, and a low temperature is maintained through the day or night. At each milking the pans are removed to the shelves to make room for the fresh milk. Some very nice dairy houses are rigged up entirely above ground, and one I saw last summer in the town of Solon, Cortland county, was so arranged that it seemed almost as good as a spring-house. In that and many others I noticed the pans were set upon shelves made by turning two narrow boards edgewise, so that the least possible surface was kept from the air. But much of this expense and trouble may be saved if the practice of churning the milk instead of the cream be adopted.

Butter-makers seem to be divided into two classes upon this question of churning the milk or only the cream. By far the largest number in this country churn the cream, while in England, Scotland, and a good part of Ireland, the milk is more generally churned. Carefully conducted experiments have established the fact that there is a gain in quantity where the milk is churned of full seven per cent over the yield from the cream alone. In small dairies the quality must be much improved, for by churning the milk the risk of tainted cream is avoided. Some of our best premium dairies churn the milk. The most common objection made to churning the milk is the labor; but power (horse, dog, or sheep,) is now so cheap that the objection has but little force, as compared with the increased quantity and improved quality. Where water power cannot be had, sheep power is preferable to dog power, for small dairies; horse or steam for large ones.

The condition of the cream or milk when churned, is of the highest importance, for upon that depends the value of the butter. If tainted in the slightest degree, no good butter can be obtained. Everything about the dairy must be sweet and pure. Pure air is as essential as pure water, and as much butter is spoiled by foul air where the milk is set as by any other cause. Many a dairy woman has wondered why her but-

ter was not as good as her neighbour's; she had just as good cows, and was quite sure she took as much pains, and knew how to make good butter. Her mother always had good butter, obtaining the highest market price, and that she did not also get the best price was a wonder. Her father probably was a very neat man, and did not have his hog pen just under the window of the milk room, the privy on one side and the sink hole on the other. Hundreds of farmers lose from five to ten cents per pound upon all their butter by a neglect of the most obvious rules of neatness, and then blame their wives for the faults of their own shiftlessness. Then again there are great numbers of farmers that water their cattle at some slough hole of stagnant water, and then wonder that their butter is not of the best. Let no man look for good butter who has not pure water, and sweet, good herbage for his cows, and pure air in and around his milk-room.—T. C. Peters, in *Rural New Yorker.*

Domestic.

French Mustard.—One of the most relishing condiments which has ever been invented is that now known as French mustard. It is equally good with fish, flesh, or fowl, and wonderfully helps bachelors' bread and cheese (Betty says they don't deserve anything better) to go down savorily. The following recipe is an excellent way to make it, and plain table-salt may be used in place of anchovies, where there is any difficulty in procuring them. Take one pound of flour of mustard, a quarter of an ounce each of the following plants in a green state, and quite fresh; parsley, tarragon, chervil, and celery, together with one or two eschalots or garlic, and half-a-dozen pickled anchovies. Mince all these latter very fine, then rub them with the mustard. Next mix one ounce of honey, one ounce of salt, and a wineglassful of vinegar, in half a pint of water, more or less, as you wish the consistence of the mixed mustard to be, then put the mixture into small pots, with a teaspoonful of vinegar on the top, cork well down, and as its flavor improves by age, it may be kept a month or six weeks before it is brought to table. No less than five tons of mustard so prepared are imported every year from France to England, and a large amount is annually imported and consumed in this city. Why not make it at home? —*Scientific American.*

Ginger Beer.—Put a gallon of cold water into a pot upon the fire; add to it one ounce of good ginger, and one pound of sugar; let all this come to a boil, and continue boiling for half an hour; then skim the liquor, and pour it into a jar along with one sliced lemon and a quarter of an ounce of cream of tartar. When cold, or nearly so, put in half a teacupful of good yeast, to cause the liquor to work. The beer is now made. After it has worked for two days, strain it and bottle it for use; leave it bottled for a week or two. Be careful that you do not taste it before the time expires, or you will be sure to drink it all up before it reaches its prime.

Patience in Milking.—A writer in the *Ohio Farmer* says that a cow was cured of holding up her milk, by patiently milking until she ceased to hold it; and by continuing the practice, she has become an easy regular milker, and a good cow.

Whitewash.—Whitewash adds so greatly to the picturesque in the cottage and the farm-house, and is such an absorbent of impure odors, that it should be freely used, at least in the spring. Take half a bushel of fresh burned white lime, and slake it either in hot or cold water, in a tub or barrel. When thoroughly slaked, dissolve in the water required to thin the lime, two quarts of common salt, stir it thoroughly, add one quart of sweet milk, and it is ready for use, to put on with a brush, frequently stirring it up. Glues and gums cause it to scale off in hot weather.—*Hall's Journal of Health.*

Wells in Cellars.—Wells in cellars should be covered tight in order to prevent their becoming receptacles for vermin of every descriptions that infest most cellars and houses, and thus are liable by falling into them to render the water unfit for domestic uses. If the bottom of a cellar be covered with a cement, as all should be, this should extend over the covering of the well. No other serious evils result from open wells or springs in cellars, but on the other hand it has been remarked that jack frost is less likely to visit such cellars. The advantages of covering wells closely, whether in or out of cellars, are much greater than those secured by leaving them open.

Veterinary.

On the Roman Bath as Applicale to Training Race-Horses.

(*Continued from page* 437.)

The trainer now has a lucid interval. He turns the sick horses into open boxes from a temperature of 65 to 40; the cold air invigorates them, the fever is checked, the cough ceases, and the horses get well in a week. Woe to the invalids if they are still confined to the warm stable.

They may be on the sick list for months. But the racing season is over, and the money is lost. Again the trainers fall back to the ancient system, and all experience is lost upon them.

It is not to be wondered at that these horses suffer catarrhs, and that their legs fail. If you talk to a trainer, he will say: "I must keep my windows shut during the night, or the horses will be ill; they must be warmly clad, or they will catch cold; they must be well physicked, or they will fly to pieces when I put them in hard work; and they must have hard work at any risk, otherwise they won't stay a distance; if their legs show symptoms of weakness, I must support them with plaisters, elastic cloths and flannel bandages." The answer is simple. If Miss Nightingale, of undying fame, and our cleverest doctors, insist upon the windows of an hospital containing patients with every disease being kept open night and day, why are trainers to be more learned than they If the fresh air at night is not salubrious to a healthy horse, why do you strip a horse labouring under a violent inflammation and turn him out in the cold air, as the only means of saving his life? Every year tells the same sad tale of coughs and illness: they are considered as dispensations from Providence—no fault of the trainers. It is their *kismet*, like the fatalists of the East, who have great contempt for drains to carry off the filth of their cities, and thereby patronize the plague.

Warm clothing is useful after a long, severe race (a dead heat), and the horse is required to run a second time: then a trainer thinks it advisable to discontinue its use. He will walk his horse stripped in cold wind; and there he stands with his coat dry and wiry, the heat driven back to his lungs and heart. An American trainer covers his horse up with clothes, and moves him about till he breaks out in a profuse sweat. This brings the enemy to the surface; the heart and lungs are relieved; and if the horse dries up well after he is rubbed down, he is fit to run for his life, when the English trainer's horse is suffering from internal fever. An Affghan trooper comprehends this theory, and acts upon it after a long, fatiguing march; to a common English groom it is a paradox. He will clothe his horse when he ought to be stripped, and he will strip him when he ought to be clothed.

If horses be free from organic diseases, water, hot, tepid, or cold, variously applied, and hot-air baths, will cure every complaint incidental to the equine race; cold, wet linen bandages, covered with oilskin and woollen cloths, will cure sore throats more readily than mustard poultices or blisters and leave no mark. Fever, influenza, and cholic may be subdued by cold wet linen sheets around the body, and the evaporation carefully guarded by blankets till the patient perspires freely, and the disease comes to the surface; then drench well with cold water when you strip him; let him drink cold water, rub him well dry, and keep him in a cool well-ventilated stable. This water system is cheap and simple, and acts promptly on the disease, without impairing the horse's natural vigour, and there are no bills to pay. If the horse's constitution is like iron he may recover by the aid of medicine in the last stage of debility.

My training theory is, that no race-horse should be clothed beyond a linen or a cotton sheet either in the stable or at exercise, excepting during a cold winter when a simple rug may be allowed both indoors and when his work is confined to a straw bed during a frost. It is an outrage on common sense to say that an old horse is more tender than a sucking foal. The hot-air bath, by cleansing and opening the pores of the skin, restores its tone, and reinstates the animal in his original purity to despise the changes of the weather, the trainer having exerted all his ingenuity to make him tender, helpless, and susceptible. As the hot air stimulates the action of the liver, physic will seldom be required, and then in very small doses. When a yearling comes into the stable fat and fleshy, instead of giving him extra slow work and keeping him out four hours, it saves a great deal of trouble to physic him well. Extra physic is less troublesome than extra work, and it is supposed to be all the same thing in the end.

From the 15th of March to the end of the racing season, the horses should be exercised twice a-day, and be kept out altogether four hours, instead of the present system, from two hours and a half to three hours at one interval. They should always have access to water, or, according to the American system, it should be offered to them in small quantity six or seven times in the course of the day. Most horses you cannot feed too highly when they are in strong work; and my belief is that no three horses require exactly the same food and the same exercise.

A stable should be built on brick arches, unless the foundation is chalk or limestone. Rooms about seventeen feet in height, with large windows, ventilated near the ceiling by hollow or perforated bricks; no mangers to the stalls or boxes; large white wooden basins hooked on to staples in the wall for the corn—the said basins to be taken away and washed, when the horses have fed; and in every stall a fixture for a water-pail. There are three appendages necessary to a perfect establishment—a dormitory for the lads, who should not be allowed to sleep in the stable, because when the night air is cool they will shut down the windows; a Roman bath; thirdly, a weighing-machine, to register each horses weight after each operation of the hot air, and after every public race or trial. A wooden grating over the floors of the stalls fitted with iron hinges to trice up to the sides, in order to be washed and purified, would be a great improvement, and there would be no necessity for straw litter. The stable plans of Mr. Knightly,

Cannon-street, London, are admirable, and afford the most perfect ventilation without a cold current of air.

All the cavalry depots in Great Britain, Ireland, and India ought to be fitted with Roman baths capable of containing six horses. In India there are two indigenous complaints which destroy forty per cent. of our cavalry horses. The first is a cutaneous disorder called burnsatee, from the Hindostanee word burusaria, relating to this disease, peculiar to the rainy season: it generally attacks horses picketed out in wet ground. No doubt, the disease is propagated by an insect, and is contagious. This fearful complaint is of a tubercular nature; the skin swells, then ulcerates until regular sores are formed: no part of the body is exempt but it generally commences in the legs, and is considered incurable. The second, a cold night air called the wind-stroke, which paralyzes a horse's loins—and I have heard of every horse in a stable being disabled in one night: they rarely recover. It is very probable that the hot-air bath would cure both these terrible diseases, and at a very small expenditure millions of rupees may be saved.

To a hunting establishment a bath is a most valuable acquisition: during a long frost horses may be kept in the most perfect condition. After a hard day's work it is a most powerful restorative to man and horse; and nothing would surprise me less than to hear that the kennel lameness in hounds (which I presume is rheumatism) can be cured by the same process.

Finally, old-fashioned trainers will condemn the bath without condescending to investigate its results; for nothing is so intolerant or presumptuous as the prejudice of an ignorant man. It reminds me that when steam was in its infancy a celebrated stage-coachman hoped to be hanged, or something worse, if they could ever travel so fast upon an iron rail for twenty miles as he could drive his old chestnuts. Of course, this hot air, so potent in its effects, may be abused like any other valuable gift. I leave to clever and experienced men to define where its use ends and buse begins. Grooms have much to learn; still more to forget. And as the farmers of 1861 ridicule the system of husbandry in 1820, so will the trainers of 1870 amuse themselves with the errors of their predecesors in 1806.—*Hon. Admiral Rous, in Bailey's Magazine.*

Corns in Horses.

By Hugh Ferguson, Her Majesty's Veterinary Surgeon in Ireland.

There is, perhaps, no defect constituting unsoundness in horses more frequent than that of corns, nor more dreaded by purchasers yet more misunderstood. It is an eroneous idea to imagine that a corn in the horse is the same as a corn on the foot of a human being: they present no resemblance whatever, excepting occasionally in one of the effects they produce—namely, lameness. The corn of the human foot is a callous thickening of the skin, particularly of its outer layer, resulting from pressure, and causing by its presence, considerable tenderness on the cutis, or true and highly sensitive skin beneath. The corn of the horse's foot is quite different. What smiths and horsemen call a corn is a reddened state of that portion of the sole at the heel intervening between the bar and the crust. But this reddened state of the horny sole is merely an injury done to the sensitive part by which it is secreted; nor is the injury immediately vertically above the discolored horn, but rather posterior to it, or further backwards, the sole in that region growing downwards and forwards. Corns in horses do not produce lameness in one case out of twenty in which they are present. When they do so, it is in consequence of the sensitive part which secretes the discolored horn becoming inflamed and, consequently, tender. The inflammation in some instances, goes on to the formation of matter which, increasing in quantity, unless the horn beneath it is cut away, allowing its escape, gains the upper margin of the crust, and finds vent between hair and hoof at the coronet; until it escapes thus, or is let out by paring the horn away at the sole, the animal evinces symptoms of intense suffering, which is diminished immediately on the matter getting vent. In a litttle time the lameness disappears, fresh horn of a healthy character is secretêd, and the parts assume a thoroughly normal state. In time the healthy growth of horn displaces the horn that had by the suppuration been separated from the secreting surface. This is the most favorable termination. Not unfrequently, however, the secreting surface of the sensitive sole and heel becomes so injured that its function becomes permanently impaired, to such an extent that it never afterwards secretes horn of a healthy character, or that is able to protect the internal sensitive parts from external injury. This generally occurs in flat-footed, weak heeled horses, particularly if the sole be what is called pumiced—sunken towards its centre.

The usual mode of treating corns is calculated rather to aggravate than diminish the evil. From fancying the corn in the horse to be similar to the corn on the foot of the human being, it has been the habit of farriers and veterinaries to keep the discolored horn, called the corn in horses, continually pared down and thinned, as nearly to the quick as possible. This practice is bad and calculated to make matters worse. It merely removes a portion of the discolored sole, which had far better be left for the protection of the part beneath it. The disease lies not in the reddned horn, but in the state of the secreting parts by which it is formed, and effusion of the blood which mingles with its structure, and thus gives that reddish tinge to the horn which

has led people to mistake it for the disease itself, instead of merely one of its effects. The sole admits, under some circumstances, from its peculiar structure, to some extent, even of sanguineous percolation taking place. In the horse, corns are, in the majority of instances, rendered more likely to produce lameness by being pared than by being left alone, at least as far as the application of the knife. The paring, certainly, diminishes the appearance of the redness, but generally does more harm than good to the part causing the redness—namely, the tissue that secretes that portion of the sole and bar.

The great majority of horses with good action on the road get corned; yet if the feet be well formed, and fairly shod, it is not one in twenty cases in which the corns are found productive of any inconvenience. It too often happens that corned horses, even with well-shaped feet, are made lame merely from the injudicious application of the knife to remove the discolored sole in the angle between the internal bar and quarter. The principal cause of corns is shoeing. It is exceedingly rare to see a corn in an animal that has not been shod. The inner heel of the shoe seems to be the cause of the mischief. Horses that are shod with three quarter shoes, or tips, are very rarely affected with corns—not, perhaps, one in a thousand. It is generully thought that corns proceed solely from bad shoeing. But there are horses, even with finely shaped feet, that no shoe covering the inner quarter, however well made, fitted, and put on, will prevent from having corns. It too often happens that the shoeing smith is blamed for the presence of corns without reason, many imagining that if a horse be properly shod there can be no corns, no matterwhat his action, or work: a most mistaken idea. There are many farriers, grooms, horse fanciers, and even veterinarians, who state that whenever there are corns it is the fault of the shoeing, and that good shoeing is a certain preventive against the affection. Never was there a greater fallacy.

Treatment of Corns.—This will much depend on the state of the affection, and the peculiarity of the foot. If there be merely redness of the sole between the bar and quarter of the crust, and that the foot is well shaped, a three quarter shoe should be used. In case it is determined to use a full shoe, there should be a portion cut out of its foot surface, for about an inch and a half on its inner quarter, so that when the shoe is nailed on, and the animal is standing, with the opposite leg lifted up, there will be a space between the inner quarter, and the shoe. If the foot have weak qearters, be very broad and flat, or have a pumiced sole, a bar shoe is desirable. But the paring, or the thinning, of the reddened sole of the heel should be avoided, as it should in all cases of corns, no matter how the foot is shod, excepting where there is a formation of matter, which should be let out as soon as its existence is ascertained with certainty; and a poultice applied to the foot until all pain and inflammation shall have subsided. The animal should not be worked until the horn that had been cut away shall have been replaced. It is the habit of farriers to, what they call, "dress corns" with butter of antimony and other caustics. The practice is a bad one, and is often productive of serions mischief. I have on several occasions seen fatal results from the injudicious application of caustics to suppurating corns. Some practitioners go even to the extent of applying a heated iron. I lately saw a case in which fatal tetanus (locked-jaw) was the result of such treatment.

Corns, however trifling, legally speaking, constitute unsoundness. Yet, if the animal have a well shaped foot, goes free from lameness, and that the horn of the affected portion of the sole seems strong and sound, with no alteration in its structure excepting discoloration, the horse should not be rejected by the purchaser merely on that account; although such is the established custom and the state of the law, that the veterinary surgeon is obliged to pronounce him unsound. These cursory observations are not intended as a complete treatise on the subject, which is a very extensive one, but merely for the purpose of correcting the principal errors generally received as truths relative to corns in horses. —*Irish Farmer's Gazettee.*

Miscellaneous.

The Fox-Hunting Pretender.

BY BALLINASLOE.

To my thinking the genuine Fox-hunter of the present day is the *beau-ideal* of a sportsman. There was a time when the fox-hunter could not mention racing, and racing men, but in terms of contempt. Those old times and old prejudices are happily gone by, and the fox-hunter and racing man are now found in the same person.

The nobleman or gentleman with a stud of hunters during the season, is frequently seen as an amateur donning the silk in the summer, and often steers his own or his friend's horse to victory. This is cheering to the heart of the *general sportsman* when he sees it, and though he may prefer one sport to another, he is ever found ready to promote *all sport*, where it is in his power to do so.

The truly noble science of fox-hunting, like all pursuits, as well as phases of society is, however, not without its pre'enders, men who are too conceited to be considered amateurs, and too ignorant to be taken as professors.

The first exhibition of the fox-hunting pretender is at the cover-side. He wishes to be, indeed he thinks *he is*, the observed of all observers;

but by far the greater part of him is his *dress*. He is the pink of fashion, if not the mould of form in the saddle. His chief desire is to catch the eye of the ladies in the carriages assembled to witness the first cast of the hounds on a beautiful morning. He is perfumed like a court milliner; nothing can surpass the elegance of his *kid* gloves, carefully buttoned, and fitting without vulgar wrinkle, to show the shape of what he considers an aristocratic hand. His bright scarlet is without a crease, smooth, shining, and *'killing,'* though it has never been in at a *'death.'* His necktie is of the most fashionable pattern and color; his cap is as smooth at the skin of a mole, black as the raven's wing, and has never been soiled in the least by vulgar mud. His inexpressibles are as clean as a new-washed trencher, and his black leathers are so brightly japanned that they would serve his groom as a mirror while he shaves. He carries a whip, too; but more for ornament than use. It is of the most fashionable make; the thong surpases anything ever witnessed in the possesion of an old hand.

His hunter, of course, is likewise of the most fashionable blood and high descent, clipped to the extremest nicety. In order to attract the attention of the carriage parties, he makes his horse curvet and frisk about, the ladies arrive at an unamimous conclusion that he is "too handsome for anything."

Well, the hounds are cast into cover; it is well drawn and a "find" is almost certain. Our hero pases in front of all the carriages, and then canters gaily along the margin of the cope, the foremost apparently on the alert. He is doing double duty, listening to the pack and admiring himself. He is very happy (vain people are mostly happy) but he is not on such good terms with the members of the hunt as he is with himself. Yet he is invariably placing himself the most forward, and in the very spot where he ought not to be. The "old hand" with his scarlet faded and stained with many a desperate run over every sort of groud, and every description of fence, his cap awry, and mounted on his old brown veteran that has carried him up to many a bursting finish, surveys him from head to stirrup, quietly remarking to an equally old stager "Wiggins will lead the field to-day, and outshine us all." "No doubt about that, and return home with the 'narrative,' not of the 'brush.'"

One of the whips proceeds to the place where "Wiggins" has placed himself, and observes, "you must come away out o' that, sir, for, if the fox breaks cover on this side that is the very spot, but not whilst you place your horse right in the way." But as this mild reproof is disregarded, Wiggins stands his ground, as much as to say, "I should like to see *you* try to move me." But the master now approaches; one *look* does the business; Wiggins changes position, but is not the least crest-fallen.

The fox breaks at the point where the whip had intimated. The huntsman has his hounds well together, and well laid on the drag, without that loud shouting and hallooing which prevails in some hunting countries when a fox is viewed away. Take your time, gentlemen," says the huntsman, we have a staunch fox before us to- day." This is only meant for such as Wiggins, though not for the veterans. Horses are nicely collected in hand, and attention directed to the line which the fox shapes out for hi nself. The larger number of the field are on the move forward. Wiggins rushes his horse to the front, and makes running, but he instantly receives an admonition from the huntsman to hold 'ard, and not gallop over the hounds.

The fences are all c'eared in very fair style, but soon afterwards the field began to be rather squandered, and the selection principle is adopted, curving hither and thither to obtain the eaisiest leaps; the tailiug system has commenced; the best men and horses now draw to the fore; the game old dog-fox tears along his course for dear life. Wiggins is determined to be up; he now approaches a bullfinch with a drain beyond, and gallantly charges it; but, taking off to soon, his horse lights with his chest on the opposite bank, and poor Wiggins is thrown backwards into the drain; and the bright scarlet is of tan hue, his white cords are cordless and besmeared with mud, and crest-fallen, he leads his horse across the fields in the direction of home.—*Irish Country Gentleman's Newspaper.*

To Prevent Flies from Teasing Horses.—Take two or three small handsful of walnut leaves, upon which pour two or three quarts of soft cold water, let it infuse one night, and pour the whole, next morning, into a kettle, and let it boil for a aquater of an hour. When cold it will be fit for use. No more is required than to wet a sponge, and, before the horse goes out of the stable, let those parts which are most irritated be smeared over with the liquor, viz: the flank, etc. Not only the lady or gentleman who rides out for pleasure will derive a benefit from the leaves thus prepared, but the coachman, the waggoner, and all others who use horses during the hot months.

How to oil Harness.—We all know that it is of great benefit to oil our harnesses, yet many of us neglect to do it, because we regard it as a dirty job; but it is easy enough, if done right. My process for doing it is as follows:

First, I take the harness apart, having each strap and piece by itself; then I wash it in warm soap suds. I used to soak it in cold water for half a day, as others did, but I find that warm water does no harm, and much facilitates the job. When cleaned, I black every part with a harmless black die which I make thus:—One ounce of exfract of logwood, twelve grains bichromate

of potash, both pounded fine; upon that I pour two quarts boiling rain water, stirring until all is dissolved. When cool, it may be used. I keep it on hand all the time, in bottles. It may be applied with a shoe brush, or anything convenient. If any one objects to the use of this blacking, fearing the brichromate of potash it contains would injure the leather, I would just say that this kind of potash will not injure the leather, even when used in a much larger proportion. The blacking generally contains copperas — a sulphate sometimes made of oil vitriol and iron, and it is found that it will eat out the life of leather, unless used with great caution. When the dye has struck in, I go through the oiling process. Some have a sheet-iron pan to oil in, which is better than anything; but I have a sheet of iron nailed to a board; it is about two or three feet square. This I lay upon the table, and I lay a piece or part of the harness upon this, and with neats-foot oil applied with a paint brush, kept for the purpose, I go over it, till every part is oiled. The traces, breaching, and such parts as need the most, I oil again. For the last oiling I use one-third castor oil and two-thirds neats-foot oil mixed. A few hours after, or perhaps the next day, I wipe the harness over with a woollen cloth, which gives it a glossy appearance. Why I use castor oil for the last coat, is because it will stand the effects of the atmosphere, the rain, etc., much longer than neats-foot oil, consequently the harness does not require oiling so often by its use. One pint of oil is sufficient for one set of harness.

The common way of oiling harness is to apply as much neats foot oil containing lamp-black as the leather will take up; then washing off with castile soap and water. This way is not so good as mine, because it makes the harness smutty, and also the soap that is used contains barilla — a strong alkali, which cuts up and feeds upon the oil in the leather, and the weather (especially if rainy) soon renders the harness stiff and unyielding as before; the wax in the threads is also destroyed, and the stiches give way. I have experimented with different kinds of oil, and find that the kind, and the process, I now use is the best. —*New England Farmer.*

Small Horses.—New England has become quite celebrated, the world over, for fine horses, no small portion of which distinction has been contributed by the different branches of the Morgan horse family, and almost the only objection made to them by purchasers is, that they are all too small for common purposes. This objection may not hold good in all cases, with those who own and use them, but it is a most serious one when they are put into market, and especially when brought to our large cities for purchasers.

The idea we intended to convey in our remarks in the last number was, that with more care in breeding, we could have the same horses of the same blood, and the same comparative goodness, of equal proportion of bone, muscle, activity, endurance and courage, and from one or two sizes larger, which would obviate the only serious objection to our Morgan horses, if the breeders of them would but give them the care and feed necessary to keep them constantly growing, from the time they are taken from the dam until fully matured. By this we do not wish it understood that we would in any way advocate pampering and over feeding, for this we believe is but little better for the animal, than the neglect which too many of the New England farmers treat their colts from the time they are taken from the mare, until they are of sufficient age to be of some use upon the farm. Colts at all ages should have good care, and such quantity and quality of food as will keep them in a healthy and growing condition, rather than in a high state of flesh. In addition to this, they should have such light work put upon them as to develope their bone and muscle, but not enough, or of such kind as to over-task them.

We should think that the average weight of Morgan horses would fall nearly or quite as low as eight hundred and fifty pounds. This, every intelligent breeder knows, is more than a hundred pounds less than it need or should be, under proper and suitable breeding. Indeed, we believe the average could be made a thousand pounds, which, according to our notion, is the best size, when in competent form, for a horse for all the purposes of the farm and road.

Mr. Rarey, in his exhibitions in this and other cities, brings out some very diminutive ponies scarcely more than two feet high, which he brought home with him from Europe. He thinks they are of the same race of our common horses, but which have run down to their present size from entire want of care. On the same principle we can see no reason why our Morgan horses would not become larger or smaller, according as they are bred, and still retain all their good qualities.—*American Soock Journal.*

The Soil Breathes.—Certainly it does, just as truly as you do. A few years since; if one asserted that trees had lungs and breathed, he would have been held to an argument to prove it; just as a few years earlier nobody would have believed that a fish's gills, and the leaves of a tree, and the lungs of a beast, all performed the same office, that of aerating the blood or sap. The soil breathes. How does it breathe? Its circulating fluid, the blood of the soil, is water; this comes to it from the air, and is already aerated. True but this soon loses its gases by contact with the soil, just as the arterial blood fresh from the lungs, loses its oxygen when passing its circuit in all parts of the body. The blood comes back to the lungs for more oxygen, but the blood of the soil cannot do this, so we must let the air in, to come in contact with it. We cannot here explain the working of the soil, but

would thus briefly enforce the necessity of stirring the soil during droughts as deeply as practicable, not to interfere with the roots of growing plants and those of previous culture, so that a deep and light soil shall invite a free circulation of air beneath the surface. Hot air the moment it presses beneath the surface, becomes very moist, from the water which it originally contained, and it deposits it, thus not only aerating the soil, but adding to its moisture. Cold air can hold but little moisture, but hot air dissolves an immense quantity, which it deposits when it cools, or on cool surfaces. Who has not noticed of a winter's day, a locomotive leaving behind it a snowy cloud of vapor, like a comet's tail, often floating for a minute after the train has passed? Think of this and watch the steam cars on days, when the hot breath just as full of water as in winter, is puffed out into the eye of the sun, and not steam enough shows to make a shadow—it is so quickly absorbed by the air.—*Homestead.*

The idea of the Spinning-jenny.—Suddenly he (James Hargreaves) dropped upon his knees, and rolled on the stone floor at full length. He lay with his face toward the floor, and made lines and circles with the end of a burned stick. He rose, and went to the fire to burn his stick. He took of his bristly hair with one hand, and rubbed his forehead and nose with the other and the blackened stick. Then he sat upon a chair and placed his head between his hands, elbow on his knees and gazed intently on the floor. Then he sprang to his feet, and replied to some feeble question of his wife (who had not risen since the day she gave birth to a little stranger) by a loud assurance that he had it; and taking her in his sturdy arms, in the blankets, the baby in her arms, he lifted her out, and held her over the black drawings on the floor. These he explained, and she joined a small, hopeful, happy laugh with his high toned assurance, that she should never again toil at the spinning-wheel—that he should never again 'play,' and have his loom standing for want of weft. She asked some questions, which he answered, after seating her in the arm-chair, by laying her spinning-wheel on its back, the horizontal spindle standing vertically, while he made the wheel revolve, and drew a roving of cotton from the spindle into an attenuated thread. "Our fortune is made when that is made," he said, speaking of his drawings on the floor. "What will you call it?" asked his wife. "Call it? What an we call it after thysen, Jenny? They called thee 'Spinning Jenny,' afore I had thee, because thou beat every lass in Stanehill Moor at the wheel. What if we call it 'Spinning Jenny?'"—*Men who have Risen.*

Startled.—It was early in the month of July, the rain drops were glistening on the countless leaves of the trees, as the rising sun shed his glories upon them; I was silently forcing through the water-laden branches which over-hung the path to the rendezvous, where I expected to meet the old voyager's son with his canoe, when I was startled, nay, nearly horrified, by the sudden and rapid reproach of some gigantic and unknown animal rushing towards me through the trees with a frightful noise. I stopped, I stood, my blood ran cold; I tightly grasped my gaff; I endevoured by staring to ascertain what brute it might be and how I could defend myself. As it quickly approached me, when the apparition—which was nothing more than an Indian (and a boy) with his canoe carried in the usual manner upon his head and shoulders—passed me by, and in a soft and rather melodious voice uttered the words "allons."—*Salmon Fishing in Canada by a Resident; edited by Colonel Sir James Edward Alexander.*

The Delights of Demerara.—The men in Demerara are never angry, and the women are never cross. Life flows along a perpetual stream of love, smiles, champegne, and small talk. Everybody has enough of everything. The only persons who do not thrive are the doctors; and for them, as the country affords them so little to do, the local government no doubt provides liberal pensions. The form of government is a mild despotism, tempered by sugar. The Governor is the father of the people, and the Governor's wife the mother. The Colony forms itself into a large family, which gathers itself together peaceably under parental wings. They have no noisy sessions of parliament as in Jamaica, no money squabbles as in Barbadoes. A clean bill of health, a surplus in the colony treasury, a rich soil, a thriving trade, and a happy people—these are the blessings which attend the fortunate man who has cast his lot on this prosperous shore. Such is Demerara as it is made to appear to a stranger.—*Mr, Trollope's West Indies.*

Mental Power of the Bull Terrier.—A well known black-and-tan terrier, which lately resided at Margate, and was named Prince, was accustomed to make his own purchases of biscuit, as often as he could obtain the gift of a half-penny for that purpose. On several occasions the baker whom he honored with his custom thought to put him off by giving him a burnt biscuit in exchange for his half-penny. The dog was very much aggrieved at this inequitable treatment, but at the same time could find no opportunity of showing his resentment. However, when he next received an eleemosynary half-penny, he wended his way to the baker's, as usual, with the coin between his teeth. As soon as the baker proffered him a biscuit Prince drew up his lips, so as to exhibit the half-penny, and then walked coolly out of the shop, transferring his custom to another member of the same trade, who lived on the opposite side of the road.—*Routledge's Illustrated Natural History; by the Rev. J. G. Wood.*

Idleness not Happiness.—The most common error of men and women is that of looking for happiness somewhere outside of useful work. It has never yet been found when thus sought; and never will be, while the world stands; and the sooner this truth is learned the better for every one. If you doubt the proposition, glance round among your friends and acquaintances, and select those who appear to have the most enjoyment through life. Are they idlers and pleasure-seekers, or the earnest workers? We know what your answer will be. Of all the miserable human beings it has been our fortune or misfortune to know, they were the most wretched who had retired from useful employment, in order to enjoy themselves. Why, the slave at his enforced labour, or the hungry toiler for bread, were supremely happy in comparison.

Physical Training of Children.—Is it not an astonishing fact, that though on the treatment of offspring depend their lives or deaths, and their moral welfare or ruin, yet not one word of instruction on the treatment of offspring is ever given to those who will hereafter be parents. Is it not monstrous that the fate of a new generation should be left to the chances of unreasoning custom, impulse, fancy—joined with the suggestions of ignorant nurses and the prejudiced council of grand-mothers? If a merchant commenced business without any knowledge of arithmetic and book-keeping, we should exclaim at his folly, and look for disastrous consequences. Or if, before studying anatomy, a man set up as a surgical operator, we should wonder at his audacity and pity his patients. But that parents should begin the difficult task of rearing children without ever having given a thought to the principles — physical, moral, or intellectual—which ought to guide them, excites neither surprise at the actors nor pity for their victims.

To tens of thousands that are killed, add hundreds of thousands that survive with feeble constitutions, and millions that grow up with constitutions not so strong as they should be; and you will have some idea of the curse inflicted on their offspring by parents ignorant of the laws of life. Do but consider for a moment that the regimen to which they are subject is hourly telling upon them to their life injury or benefit; and that there are twenty ways of doing wrong to any one way of going right; and you will get some idea of the enormous mischief that is almost everywhere inflicted by the thoughtless, haphazard system in common use. Is it decided that a boy shall be clothed in some flimsey short dress, and be allowed to go playing about with limbs reddened by the cold? The decision will tell on his whole future existence—either in illness; or in stunted growth; or in deficient energy; or in a maturity less vigorous than it ought to have been, and consequently hindrances to success and happiness. Are children doomed to a monotonous dietary, or a dietary that is deficient in nutritiveness? Their ultimate physical power and their efficiency as men and women will inheritably be more or less diminished by it. Are they forbidden vociferous play, or (being to ill-clothed to bear exposure,) are they kept in-doors in cold weather? They are certain to fall below that measure of health and strength to which they would else have attained. When sons and daugters grow up sickly and feeble. parents commonly regard the event as a misfortune —as a visitation of Providence. Thinking after the prevalent chaotic fashion, they assume that these evils come without causes; or that the causes are supernatural. Nothing of the kind. In some cases the causes are doubtless inherited; but in most cases foolish regulations are the causes. Very generally parents themselves are responsible for this pain, this debility, this depression, this misery. They have undertaken to control the lives of their offspring from hour to hour; with cruel carelessness they have neglected to learn anything about these vital processes which they are unceasingly affecting by their commands and prohibitions; in utter ignorance of the simplest physiologic laws, they have been year by year undermining the constitutions of their children; and have so inflicted disease and premature death, not only on them but on their descendants.—*Education; Intellectual, Moral and Physical,*" *by* Heraet Spencer.

Forests—influence on Climate.

That a *tree* should ever need an advocate, is strange enough. It can assert priority of claim, —" the right of possession,"—it was here before the white man,—before the Indian even! It is about as handsome as any man, full as honest, and sometimes a good deal more useful. It is the most perfect specimen of architecture that human eyes ever looked upon. If a tree must be felled—if what no man could create, must yield its beautiful form, and its valued life to man's necessities, let the woodman spare the tree if he can. I adduce valuable testimony to the importance of forests, as follows:

Extract from the Report of the Secretary of the Bombay Geographical Society for 1850.

It was early remarked by Humboldt, that men in every climate, by felling the trees that cover the tops and sides of mountains, prepare at once two calamities for future generations,—the want of fuel and a scarcity of water. Trees, by the nature of their perspiration, and the radiation from their leaves in a sky without clouds, surround themselves with an atmosphere constantly cold and misty. They affect the copiousness of springs, not, as was long believed, by a peculiar attraction for the vapors diffused through the air, but because, by sheltering the soil from the direct action of the sun, they diminish the evaporation of the water produced by rain.

When forests are destroyed with an imprudent precipitation, as they are everywhere in America, the springs entirely dry up, or become less abundant. The beds of the rivers, remaining dry during a part of the year, are converted into torrents whenever great rains fall on the heights. The sward and the moss disappearing with the brushwood from the sides of the mountains, the waters falling in rain are no longer impeded in their course; and, instead of slowly augmenting the bed of the rivers by progressive filtration, they furrow, during heavy storms, the sides of the hills, bear down the loosened soil, and form those sudden inundations that devastate the country. Hence it results that the destruction of forests, the want of permanent springs, and the existence of torrents, are three phenomena closely connected together.

In India their effects are very appreciable. At Dapcolie the climate is much more hot and dry than formerly; streams now dry up in December which used to flow until April or May. This is attributed to the destruction of forest which formerly covered the neighboring hills, now barren and desolate. In southern Coucan, within the space of fifteen years, the climate has been greatly deteriorated by the diminution of vegetation, and consequently of rain. The people of Pinang have memorialized government against the destruction of their forests, feeling sure that the result, by its continuance, will be the ruin of their climate. The dreadful drouths which now so frequently visit the Cape de Verde Islands are avowedly due to the removal of their forests; and in the high lands of Greece, where trees have been cut down, springs have disappeared. In India, a few years since, a proprietor, in laying down some grounds, well watered by an excellent spring, for a coffee garden, at Genmore, despite the advice of the natives, *cleared the adjacent ground*, when the supply of water vanished. Cases are also cited, where the clearing of jungles was followed in every case by an almost immediate diminution of water; when the jungle was allowed to grow again, the water returned; the springs were opened, and flowed as formerly The St. Helena Almanac for 1848, gives particulars of the increase of the fall of rain for the last few years, attributable to the increase of wood; within the present century the fall has nearly doubled. The plantations seem to have performed another service to the island. Formerly, heavy floods, caused by sudden torrents of rain, were almost periodical, and frequently very destructive; for the last nine years they have been unknown.

Jochim Frederick Schouw, Professor of Botany at Copenhagen, speaks as follows of the influence of forests upon the atmosphere:—"We find the most evident signs of it in the torrid zone. The forests increase the rain and the moisture, and and produce springs and running streams. Tracts destitute of woods become very strongly heated, the air above then ascends perpendicularly, and thus prevents the clouds from sinking, and the constant winds (trade winds or monsoons,) where they can blow interruptedly over large surfaces, do not allw the transition of vapors into the form of drops. In the forests, on the contrary, the clothed soil does not become so heated, and, besides, the evaporation from the trees favors cooling; therefore, when the currents of air loaded with vapor reach the forests, they meet with that which condenses them and change into rain. Since, moreover, the evaporation of the earth goes on more slowly beneath the trees, and since these also evaporate very copiously in a hot climate, the atmosphere in these forests has a high degree of humidity, this great humidity at the same time producing many springs and streams."

Testimony of this kind could be accumulated, and I hope that the reading public will give the matter serious thought.—H. T. B.—*Rural New Yorker.*

The Salmon.

A writer in Chamber's Edinburg *Journal* says, "the destruction of this fine fish would seem to be the same everywhere." This is indeed true. It is yet within the memory of many, when the rivers of Maine were so plentifully stocked with salmon as the most productive stream in the B. N. A. Colonies. Now, the taking of a single one even, is an event of rare occurrence.

The same is true of New Brunswick, where the noble fish was once taken upon the small streams in hundreds, they are now found but in small numbers or not at all. Indeed, whether in England, Ireland, Scotland, Wales, the United States, or these British North American Provinces, the course pursued is that which will eventually lead to the extermination, rather than the preservation of this noble fish. Thus destroying a valuable source of revenue and profit, as well as exterminating this Prince of fresh water fishes —the Salmon.

"So great has been the diminution of Salmon of late years in the United Kingdom, that serious fears have begun to be entertained, lest the supply should fail altogether. In consequence Royal Commissioners have been appointed to enquire into the matter in England, Scotland and Wales." Copies of their reports to Parliament have already been published. "They are very bulky, but most interesting volumes, scarcely to be waded through, however, except by those who take a deep interest in the matter."

The London *Times*—which is a good authority on all topics—takes up the matter in a leading editorial, from which the following extracts are made.

"Sowing and reaping, working and eating are things which in this world of ours, go so necessarily together, that an exception to the universal rule reads almost like a miracle. Yet an exception there is. One description of produce, and one only, is self-grown, self-reared, and self-ripened, without any demand for space, care, seed, or investment of human pains or money. Salmon flock of their own accord to the rivers of these islands, and there deposit their spawn.—

The spawn is quickened into life, and myriads of little fish soon swarm in the stream. At the beginning of May, or about this very time of the year, these young fish swim down the river to the open sea. There, in their natural feeding-grounds, they fatten so rapidly that they increase upon an average, at the rate of two or three pounds in weight every twelve months. The little fish, about the size of a gudgeon, which left the river in May, 1861, would be a fine salmon of six or seven pounds in April, 1863. But the singular point of the case is, that after fattening himself in this manner, he will of his own free choice, come back again to be killed. The same instinct which took him off to sea, brings him back again to the river. He will infallibly return from his pasture to his nursery, and there offer himself for capture, without any cost for keep, attendance or transport. He will make flesh more rapidly than an Essex pig, and do it all for nothing. The only thing he asks is, not to be interrupted—not to be stopped when he comes here to breed—not to be turned back when he goes away to grow. All the rest he will do for himself; and will add pound after pound to his own substance for our benefit and delectation, if we will but leave him alone to do it."

"The salmon lives at sea, but comes up the rivers to spawn. The young salmon, bred in the river, go down to the sea to grow, after which they, in their turn, come up the river, as their parents did before them. They may therefore be caught either in the sea itself, just by the river's mouth, or at any point of the river between its mouth and the place to which they ascend. Now, the old legal maxim says that *ferœ naturœ fiunt occupantis*, which doctrine, applied to the present case, imports, that a salmon belongs to the man who can catch him first.

When the fish are going up, the first chance, of course is to be found at sea, and this is where "fixed engines" are established to intercept the supply from the river. When the fish are coming down, the condition is reversed, and the best chance lies in the river at the point nearest the spawning ground. This, therefore, is where the "weirs" are placed. The fixed engines catch the great salmon on their way up; the weirs trap the little ones on their way down. But, besides this, every proprietor of the land on each side of the river, and throughout its course, has his own interest in the produce of the stream, and is anxious accordingly, to increase his particular dividend at the expense both of his neighbours above, and his neighbours below. "Human nature," will be the remark. No doubt; but the nature of man in such respects conflicts terribly with the nature of salmon, and the poor fish are killed altogether, while "proprietors" are fighting for them. Half the old fish cannot get up to spawn; and half the young fish cannot get down to grow. We have been assured on good authority, that several hundred weight of salmon fry have been taken and sent off, at a single despatch, from a single English river. The young swarm was stopped on its way to the sea by a dam or weir, in which only a single hole was left for passage. At this hole a net was placed, and the little fish were dipped out by bushels at a time, to be pickled and sold as "sardines." When it is to be remembered that every one of them would, in the course of a few months, have come back again to that very river in the shape of a fine salmon, it may be imagined how deplorable was the waste of food."

"We want to see salmon plentiful—less of a luxury, and more of an article of food. It is not a rich man's affair—not an affair of sportsmen, or game preservers. It is a matter in which all have a concern, and so long and so truly has the fact been felt, that it actually found a place in *Magna Charta*. That title deed of our liberties includes a stipulation for the free run of salmon, and the same object was sought, with more or less success, in many a statute afterwards. We now know, too, that legislation can be applied to the case with advantage, for the experiment has been tried. The thing to be prevented is simply waste. It needs no argument to prove, that killing salmon when they are unfit to eat, or before they are one-tenth part grown, is a wanton and wicked act, for it is a wholesale destruction of nutritious food. It is only destruction of this character which requires to be prohibited. Let the salmon have free and unobstructed run, and no more will be necessary. We are so fortunately situated, that they come by force of instinct to our rivers, without allurement of any kind. They want only a free passage up, and a free passage down; or at least, so far free that they may increase, multiply, and grow without material hindrance."—*Halifax Journal.*

Children and Flowers.—There seems a close connection between children, and flowers,—the children of men, and flowers, the children of the earth. Flowers constitute their great natural playthings, and the young heart rejoices over the possession of a bunch of wayside flowers. And between the unstained mind of the child and the susceptible nature of the poet there is a strong likeness. As the child loves, so loves the poet; childhood and genius alike admiring the grand and beautiful in nature, and alike regardless of the pomps and vanities of life. The child's prattle and the muse's tongue speak the praises of the flowers, rejoicing in their fragrance and color, and touched with sadness when the color fades and the odor has departed. The busy people of the world, active in its hard reality, intent on enterprize and speculation, have little sympathy with the child's enjoyment or the poet's sentiment; to such a primrose is a yellow primrose, nothing more; but it is more to the child and more to the poet.—*Ladies' Treasury.*

Take care what you say before Children.—"Ah, Charley," said one little fellow to another, we are going to have a cupola on our house." "Poh! that's nothing," rejoined the other, Papa's going to get a mortgage on ours."

THE MIND WANTS FOOD.—In a civilized community mental food is as necessary as bodily food. The mind "feeds" as well as the body. It is always active. It receives and digests, and grows or dwarfs according to its nourishment. But food of some sort it must have. Milk for babes, and meat for strong men, an apostolic maxim, applies as well to the mind as the body. The speaker meant it to do so; and as there is no possible satiety in riches, as our first pound in the savings bank makes us desire to make it a hundred, our first hundred a thousand, and so on, so there is no possible satiety in knowledge. We know something—we desire to know more; we would know all things. If in our days a tree of knowledge were planted, it is not only a single apple that would be plucked therefrom, but scarcely a leaf would be left on the tree.--[Family Herald.]

THE BIBLE.—To the Bible we owe all the best laws in our best civil institutions. To the Bible Europe is indebted for much of the liberty which it now enjoys; and, little as we may think of it, the Bible too was the means of preserving the small share of learning which was cultivated during the dark ages.—*Jortin.*

Editorial Notices, &c.

DUNDAS, OR A SKETCH OF CANADIAN HISTORY, by James Croil, Montreal; B. Dawson and Son, Great St. James Street. The groundwork of a portion of this volume appeared as the Agricultural Report of the County of Dundas in the *Agriculturist* of last year. The author has now entirely re-written the Report, and added to it much other matter of an interesting character; the whole now forming a good sized volume of 350 pages, handsomely printed and bound; containing a very full sketch of the early settlement, the geology, climate, agricultural and other resources, the political, municipal and social history, of the County of Dundas, and embracing incidentally more or less, that of other parts of the province. There are numerous attractive sketches of the history of the early distinguished residents of Dundas and the neighboring counties, many of whom we are happy to learn are still living in a hale old age, and who will no doubt peruse with pleasure the reminiscences of their early days and of the infancy of their country here brought before them. This book will form an acceptable addition to the library of any Canadian interested in the history and resources of his country, especially of the counties of Stormont, Dundas and Glengary.

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Toronto, 1861.

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The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, AUGUST 16, 1861. No. 16.

Mr. Stone's Live Stock.

We take the liberty of inserting the following extracts from a letter chiefly on business, with which we were favored a few days since from F. W. Stone, Esq., of Guelph. The information conveyed cannot be otherwise than interesting to the readers of the *Agriculturist* and to all indeed who desire to promote the welfare of the country:—

"You no doubt will have seen in English papers the attractions to the Babraham sale of Southdowns, and the large gathering it called together.

"I thought I should like to have some of the blood, and let people know that Canadians appreciated fine stock as well as other nations and colonies, and that such a famed flock ought not to be dispersed without securing more or less of it. I therefore instructed my brother to attend and secure a ram for me. He purchased two, and I am pleased to say they arrived here yesterday in good condition, and I trust, in a year or two, my flock of Southdowns will be improved by this importation. The Country Gentleman mentions the purchase made by the Americans, and states the Babraham sale attracted nearly as much attention as the Royal Society Show, or only second in importance thereto. Probably you will be kind enough in the next issue of the *Agriculturist* to mention that Canada had secured two sterliug rams from this far-famed flock.

"By the bye, I see the Bates blood of Short Horns has been very successful at the Royal English Society's Exhibition at Leeds. Capt. Gunter's Dutchesses carrying off three first prizes, all three of which I believe are half sisters to my 12th Duke of Oxford, by the same bull. And it is worthy of remark that the three first calves got by this celebrated stock getter, "6th Duke of Oxford," were bred at Moreton Lodge, Guelph, Canada West. I mention this from seeing so much in the American papers respecting Mr. Thome's shipment to England, and having had two of the Grand Turk Heifers before Mr. Thorne got him, and also the Oxford's, I thought you might like (for the credit of Canada,) to say a word in the *Agriculturist* respecting Canada stock. I wish you could find time to run up for a few hours, and see my herd and flocks. I like people to see the whole, my heifers and calves are very good. The Herefords, on poor keep, have surprised me by the condition they are in. I am pleased to say my herds and flocks are in good condition, and some individuals in prime order."

A meeting of the Board of Agriculture having been held in London on the 15th inst., for the purpose of maturing the arrangements for the Provincial Exhibition, we resolved on returning to Toronto by way of Guelph, and, if possible, to give Mr. Stone a call. The party consisted of Mr. R. L. Denison, Treasurer of the Association, Mr. H. C. Thomson, Secretary of the Board of Agriculture, Mr. J. E. Pell, Vice President of the Board of Arts and Manufactures, Mr. W. Edwards, Secretary of the same, and Professor Buckland.

On arriving in Guelph we found that the next train would arrive in about two hours, which unfortunately was the only time we had at our disposal, scarcely sufficient to get a peep at the many good things which Mr. Stone possesses. We at once drove to Moreton Lodge Farm, about a mile from the town, pleasantly situated

on the main road leading to Hamilton. Mr. Stone was not on the farm, though we had the pleasure of seeing him after we had gone round; his bailiff obligingly showed us the stock, and we were kindly accompanied by Mr. Hutchinson, of Guelph.

It would be impossible to take the most cursory glance at Mr. Stone's stock generally, without feeling that here is a man who is fast destined to occupy one of the highest positions as a breeder, not in Canada only, but on the whole continent of America. Mr. Stone's Short Horn herd is now too well known and appreciated to need anything further, perhaps, than an allusion. It contains quite a number of first-rate animals of different ages, of the pure Bates' blood, which the most competent judges now regard as the very best that England possesses. The calves and yearlings, as a whole, are exceedingly promising. Without particularizing, we must refer with profound admiration to the newly-formed herd of Herefords, three of which we saw at the Royal Agricultural Society's Show at Canterbury last summer; which carried off at that national competition first prizes. The Bull is a very fine animal, and the rest of the herd, nine in number, we found grazing in a field, consisting of ordinary pasture, in excellent condition. Mr. Stone has judged wisely in commencing a herd of Herefords, to base it, regardless of trouble and expense, on the best blood, Lord Berwick's, that can be found in England; and the country is greatly indebted to his enterprise. Herefords are but little known in Canada, and the few that have, now and then, been shown at our Provincial Exhibitions, have been very inferior specimens, and could give a stranger no adequate idea of the breed, in its more improved form and advanced condition. To such as desire to see first-rate specimens of the modern Hereford, we can only say, pay Mr. Stone a visit, and you will return, both as regards Herefords and other animals, not only pleased and satisfied, but most likely considerably wiser. We were all highly gratified by their beautiful appearance. The public will now have an opportunity of forming correct conclusions as to the adaptation of this breed of cattle to the climate and wants of Canada. With no expectation that they will in any degree displace the Shorthorn, we think that they will be found to form a valuable adjunct. Mr. Stone had just received from England two Shearling Southdown Rams, which were purchased for him at the recent Babraham sale. They are handsome, and evidently fine breed animals; indicating the extraordinary degree of perfection to which Mr. Jonas Webb has been successful in bringing his world-renowned flock. We were unable, for want of time, to see Mr Stone's Cotswolds, which are now so well known to occupy a very high position, and the recent importation of rams will doubtless still further improve the form and quality of his Downs. We observed about the yards a number of excellent pigs, of the improved Berkshire and Suffolk breeds. Indeed Mr. Stone seems determined to have every description of farm animals of the best possible quality, which though costly at first, will assuredly pay the best in the end.

We would strongly recommend our young and enterprising farmers, especially, to pay Mr. Stone a visit, and to give to Moreton Hall Farm an entire day, as we hope to do before long. They will find its enterprising owner pursuing in the quietest and most unobtrusive way, a career of improvement possessing sufficient public interest to justify the few hasty remarks we have made. We know of no better study for Canadian farmers than what they would find there. Animals of superior excellence, properly housed and cared for, without any attempt at mere show or extravagant outlay in buildings. In a word Mr. Stone's Homestead, and farming operations generally, seem well adopted to the climate and wants of Canada, indicating *improvement combined with profit.* Long may they continue so!

The Army Worm.

An esteemed correspondent, residing in the county of Northumberland, sent us a few days since some specimens of two kinds of insects, one of which is producing extensive mischief among the cereals in various parts of the Province, and particularly in the south western counties. The one is the lavva of what is properly designated the Army Worm, on account of of its vast numbers and desolating ravages; the other appears to be a species of Aphis, or plant louse, belonging to a very extensive family of insects, some of which are exceedingly destructive to vegetation, while others,—to which, probably, the specimen in question belongs,—are

comparatively harmless. We subjoin two articles of scientific authority which will throw some light on this important, but, at present, complicated and mysterious subject. Like most attacks of this nature no specific remedy is known, and farmers have, in a great measure, to be passive, leaning on the omnipotent arm of Providence, and trusting in those beneficent compensating arrangements, which belong to the constitution of the natural government of the Deity. Careful observation and scientific research, doubtless tend to enable the cultivator of the soil to mitigate, if he cannot wholly prevent, these attacks on his crops. The application of quick lime or a strong solution of salt, might in case of the army worm, produce some good effect Strong brine however, cannot be safely applied to our cultivated crops, and such remedy might prove as bad as the disease. The progress of the worms has, we observe in some instance, been arrested, as they travel from one field to another, by making a deep furrow with the spade or plough, and then trampling them to death. The Hon. David Christie presented some specimens of this destructive pest at a recent meeting of the Board of Agriculture, held in London, and it was deemed of the utmost importance that the most reliable information should be obtained in reference to the habits and progress of this insect, by accurate and extensive obervations.

THE ARMY WORM MOTH.

(*From the Country Gentleman.*)

Messrs. Tucker—I have an illustration of "the pursuit of knowledge under difficulties" to present. Dr. John Bartlett of Pesotum, Champaign Co., Ill., sends us in spirits, in a tin tube, a specimen of the renowned Army worm, and of the moth which is bred from it. Now spirits is the very best vehicle in which to preserve and transmit all kinds of worms, spiders and beetles; but insects with delicate wings, such as butterflies, moths and flies are usually ruined by being wet, their wings becoming matted together in a wad, like a wet dish-cloth, and if prettily colored, their colors are liable to be altered or destroyed by spirits. An inexperienced collector, therefore, will do best to place such insects between layers of cotton in a small box, to transmit them without injury by mail or express.

On emptying the tube from Dr. Bartlett it was with deep regret that I saw this moth of the Army worm lying before me, soaked to a soft, shapeless, black mass, which might on drying wholly fail of showing me the same colors and spots which naturally belong to it. On carefully disentangling and spreading its wings, and drying it, my first step was to compare it with the broken and effaced specimens received last year from Dr. Jenkins of Maryland, mentioned in my letter to Hon. B. P. Johnson, lately published in the Co. Gent. I hereupon saw that the Army worm in Maryland last year, and that now in Illinois were undoubtedly one and the same insect. And now, by a searching look from one to the other of these soiled and imperfect specimens, I was able to gather from them certain marks by which I thought I could recognize this insect if I chanced to have any other specimens of it in my collection. Upon looking over the moths of the cut worms I find nothing like this among them. Turning then to another group, lo, here I have it!—two perfect specimens, received a few years since in a fine collection from Prof. D. S. Sheldon of Iowa College. *Laus Dei!* The riddle is now read! What for nearly a score of years I have been so anxious to obtain I now have! I know what the moth of this Army worm now is! And in the fulness of my joy hereupon, I thank you, Prof. Sheldon, and you Dr. Bartlett, and Dr. Jenkins, each and all, that you have collectively furnished me with such clues as have enabled me to make this discovery.

A short sketch of the history of this species, as it appears in our works of science, will interest the reader. Long ago, a preserved specimen of this moth found its way into the then celebrated collection of Mr. Francillon in London. Upon the breaking up and sale of that collection, this specimen passed into the possession of Mr. Haworth, who, not doubting but that it had been captured in England, described it very briefly, in the year 1810, in his *Lepidoptera Brittanica*, page 174, naming it *Noctua unipuncta* or the White Speck, by which names it has ever since been referred to by English authors and collectors, save that a new generic name, *Leucania*, replaces that of *Noctua*. It appears to have been through inadvertency that Mr. Stephens changed this name to *impuncta*, when he came to describe the species in 1829, in his British Entomology, Haustellata, vol. iii, p. 80. Later, in 1850, he refers to it under its original name, in the List of Lepidoptera in the British Museum, p. 289, it having now been ascertained that it was a North American and not a British insect.

Guenee appears to have overlooked this species of the English authors. In his valuable work on the Lepidoptera (vol. v., p. 77—Paris, 1852.) he regards it as a new species, naming it *Leucania extranea*. From him we learn that there are specimens of it in several of the Paris collections, whereby they know it to be a common insect in North America, Columbia and Brazil. He also states that a variety of it which is destitute of the white dot on the fore-wings, occurs in the East Indies, Java and Australia. I cannot but think, however, that this East India insect should be ranked as a distinct species from ours, as it differs in such a prominent character, and is so widely separated from it geographically.

From what has now been stated, it will be seen that the original and therefore legitimate scientific name of this insect is *Leucania unipuncta*. And the "Army-worm moth" will undoubtedly be the

common name by which it will be currently designated in this country, instead of the White Speck, the name given it in England.

About a dozen New York species of this genus, *Leucania*, are known to me. They are those white and pale yellow moths or millers which are so common in our meadows and other grass lands, and which flit aside in such numbers when the scythe of the mower sweeps their coverts from them. And the "black worm," which in this section of our Union sometimes shows the same gregarious and migratory habits as the Army worm of the Western and Southern States, I now infer to be the larva of some one of these moths.

I have scarcely sufficient space remaining to give in this article such a full and particular description of this moth as ought to accompany this announcement of its name, and will enable every one to distinguish it with certainty from other moths which resemble it.

It is very plain and unadorned in its appearance. The eye, on first glancing at it, only recognizes it as an ordinary looking moth of a tarnished yellowish drab color, inclining to russet, with a small white dot near the centre of its fore wings, and a dusky oblique streak at their tips. On coming to look at it more particularly, we find it to be rather less than an inch long to the end of its closed wings, or if these are extended it is about an inch and three quarters in width, different specimens varying somewhat in their size. Its fore wings are sprinkled with blackish atoms, and a short distance forward of their hind edge, they are crossed by a row of black dots, one on each of the veins. Outside of the middle of the wings, this row of dots suddenly curves forward, and from this curve a dusky streak runs to the tip of the wing, the ground color being more pale and clearer yellow outside of this streak. Though the moths of some other genera usually have a similar streak, this is the only species of this genus in which this mark occurs, and hence M. Guenee names this species *extranea*, i. e., extraneous, foreign, different, as though it did not belong here. And Mr. Stephens doubts whether it correctly pertains to this genus. But a character that will appear to common persons as more conspicuous and important, is that from which Mr. Haworth names this species. Nearly in the centre of the wing is a milk-white dot, placed upon the mid vein. This dot is surrounded more or less by a dusky cloud, and this duskiness is frequently extended forward upon the mid-vein to its base, forming a faint darker streak along the middle of the wing. Contiguous to this dot on its outer side may be discerned a roundish spot of a slightly paler yellow color than the ground, and a very short distance forward of this is a similar spot, but smaller, both these spots often showing a more tarnished centre. On the hind part of the wing the veins are marked by slender whitish lines, and between their tips on the hind edge of the wing is a row of minute black dots.

The hind wings are smoky brown, with a purlinsh gloss, and are nearly transparent, with the veins blackish. The fringe of both pairs of wings is pale yellowish, with a dusky band on the middle.

On the under side the wings are much more glossy and paler, opalescent whitish inwardly, and smoky gray toward their outer and hind sides, where they are also freckled with blackish atoms. The smoky color on the hind wings has, along its anterior edge, a row of short, blackish lines one placed on each of the veins, and in line with them on the fore wings is a faint dusky band, becoming more distinct towards its outer end, or sometimes only represented by a dusky dot on the outer margin forward of the tip. The veins are whitish, and also the hind edge, on which is a row of black dots placed between the tips of the veins. The hind wings have also a blackish crescent shaped spot a little forward of their centre.

The abdomen or hind body is smoky gray above, and on its under side ash grey, freckled with black scales, and usually showing a row of back dots along each side.

Though these moths are subject to some variety, whoever has one of them in his hands will find it to coincide so exactly with most of the particulars stated in the above description, that he will be fully assured it is this insect.

ASA FITCH.

Salem, N. Y., July, 1861.

P.S. July 17th.—A fine specimen of this moth reaches me to-day from Mr. Emery, editor of the *Prairie Farmer*. It is a male, and indicates this sex to be smaller, measuring but little over an inch and a half across its spread wings. It is also of a darker or more smoky gray color, but does not appear to differ otherwise from the description above given. A. F.

ANOTHER WHEAT PEST.

(*From the Kingston Whig.*)

"He doth take my life
Who takes the means to support my life."

Within the past few days several farmers in the neighborhood of Kingston have transmitted to the Botanical Society of Canada ears of wheat and other grains infested with an insect, which, although individually minute, presents a formidable appearance on account of the vastness of its numbers. In some cases the little parasite completely covers the ears of grain; in fact the wheat is "dark with it." The insect in question is a species of Aphis, or plant-louse. It is not probable that it now makes its appearance in Canada for the first time; but this season its unusual abundance has served to attract the attention of farmers. It appears from the newspapers that the same, or a similar insect is at present infesting the wheat and other grain crops in the United States.

The Aphides are very numerous, and many domestic plants, such as roses and geraniums suffer severely from their attacks; their usually green colour has obtained for them the name of green fly. Naturalists at once time thought that every plant had its peculiar attendant Aphis, but it is now known that the same species, in most cases, attacks various plants. They do not gnaw the leaves of the plant like caterpillars, but simply

suck their juices. The plant suffers, its energies are weakened, the leaves and other parts shrivel and blister, and an inroad is formed for other diseases.

In the present case, the fly, as yet, presents itself chiefly in the wingless form, the individuals appearing like rather large crawling mites of a brownish-yellow colour varying to apple-green. In some cases, where the whole ears were covered with the insects, the total destruction of the crop seemed inevitable, yet there is not much cause for concern. Undoubtedly, the yield will be lessened by their presence, and the quality of the grain, perhaps, slightly deteriorated, but it is not likely that the injurious effects will prove so formidable in extent as the appearance of the insect is apt to indicate. In Britain, the bean crop is annually liable to the attacks of an allied black species (*Aphis Fabæ,*) which appears in such numbers that, in autumn, when they acquire wings. hey leave the bean fields and darken the atmosphere with living clouds—yet farmers do not find their bean crop very light. This is the so-called "Cholera-fly" of Europe, which, although ominous in aspect and name, is practically felt to be injurious only from its troublesome habit of flying over the country in clouds, covering the roads with a shower of living, crawling forms, and filling the eyes, nose, and mouth of weary travellers as they pass along the dusty roads in autumn.

The rapid reproduction of Aphides is one of the most singular features in their history, and serves to explain their apparently sudden appearance in vast numbers. In these insects the ordinary laws of development appears to be departed from; but the researches of Bonnet are now strengthened by the observations of phenomena of a similar kind in certain other insects. In spring and summer, the Aphides are all females, and wingless—there being no male individuals, whatever—yet, many generations of living young are almost weekly produced throughout the summer; these are likewise females. The males are not born until the end of summer or autumn. Some of these have wings, but their comparatively heavy bodies render their powers of flight very feeble, so that when they leave the plants upon which they are parasitic, they are carried hither and thither by the atmospheric currents.

Reaping Machines.

[The reader will find much interesting information in the following letters written by Lord Kinnaird, addressed to Mr. Wilson, who read it in the course of his able lecture on reaping by machinery, at a recent meeting of the Newcastle (England) Farmers' Club.]

"I consider that we are indebted to the Rev. P. Bell, and to his brother, Mr. G. Bell, for the reaping machines at present in use, and I would refer you for further details to the *Journal of Agriculture* of the Highland Society, published by Blackwood & Sons, Edinburgh, for January, 1854, in which is a very interesting account, headed 'Bell's Reaping Machine.'

"My reason for giving Mr. Bell and his brother credit is, that, although several patents had been formerly taken out during many previous years, nothing of any note had resulted from them—and the American machines forwarded to this country, the original of those now in use, were constructed subsequently to Mr. Bell's—a larger number of which were sent to America, and there imitated.

I got one at the time, but was obliged to lay it aside, in consequence of the weight, iron being almost wholly used in its construction. Mr. G. Bell, however, naturally feeling a parental affection for this his own creation, persevered with it, and brought it at lenghth to great perfection. He made an arrangement for its manufacture with Mr. Crosskill, and it is known in England as 'Crosskill's Bell,' but at present it is manufactured by Mr. Watson, of Errol, North Britain, and it is very frequently used by farmers in Scotland. There is an account of the 'Expenses in cutting and stooking white crop of 1860 with Bell's Reaping Machine in the number for April 3rd, 1861, of the *Scottish Farmer and Horticulturist*, which is worth your looking at.

Amongst the first, if not the first machines which came from America, was Hussey's, and I immediately procured one of them; it cut the corn—depositing it behind, the driver walking at the side. The necessity for lifting the corn at once, so as to allow the horses to pass on coming round again, is objectiouable; but the great defect was that it choked.

Mr. McCormick's was, I believe, the next machine which reached us from America—to this was attached Bell's reel for drawing the corn towards the knives, and a man sat on a bar at the back with a rake, and put it into sheaves. The great merit of this machine was the serrated cutter, which, with some slight modification only is adopted in every machine at the present day, thus doing away with Bell's shears and scissors and Hussey's smooth knife. I was so much pleased with McCormick's plan of cutter that I bought the machine, and establi hed a private work for the manufacture of reaping machines, being satisfied that, to bring them to perfection, much time and ingenuity would be requisite, and that the self-delivery was indispensable. I engaged a very ingenious blacksmith, since, I regret to say, dead, and by dint of carrrying out not only my own ideas, but the very valuable suggestions I received from practical men, I succeeded in producing a very workable implement, but I found, by practice, that there were so many contingencies to be provided against—such as hard, soft, unequal ground, grain laid, &c.—that the machine would require many improvements, especially in its simplification, before any ploughman would be able to work it, or an ordi-

nary blacksmith repair any part which might give way. The difficulty was that as it was impossible to postpone the cutting of the crop, there was not time for remedying any defect which might be discovered, and affording the opportunity of another experiment. At last, I resolved to make arrangements for a field of wheat to be kept for the purpose of experiments, and I believe the last portion was not cut till the beginning of November; but I was amply rewarded—the result being that I have got a most complete implement, and one which I have used constantly for the last three or four years; indeed I have four, as I consider that on a good sized farm, a couple of machines are of great use. I gained the first prize at two meetings of the Highland Society of Scotland, but did not exhibit at the English Society last year, though I intend to do so at Leeds this year. I will now proceed to give you my opinion, founded on considerable practical experience, on reaping with machinery, and on the different machines now in use,—of course my opinion can only be taken for what it is worth.

In the first place, I consider that a reaping machine without self-delivery is an imperfect implement, in so far, that it is no saving of expense, while one great advantage, that of corn being laid down lightly on one side, to which reference will heareafter be made, is lost. On the other hand, there is no doubt that where hands are scarce, or on small fields and very hilly ground, one with self-delivery may be used with advantage. A considerable number of these have been sold by different makers, and I suspect the cheaper rate at which such can be made, than the self delivery machines, has been an inducement to farmers to purchase them, in spite of their requiring two men, one to drive, the other to take off, which last is not able to do a good day's work if the crop is heavy; and, indeed, even with a light crop of Wheat, no man can continue such work for a number of days consecutively, whatsoever he may do for a mere exhibition. There are, I know, several ingenious plans for assisting the raker, but nothing equals the sel-delivery. It is difficult to form a fair estimate of the respective merits of machines seen only at shows, as on such occasions they are driven rapidly, which makes them cut better, but the fatigue consequent thereon to the horses makes this rate of speed impossible in practice. The self-delivery machines, however, which I am about to mention, do not require to be driven fast in order that their work may be performed well. I will only speak of those with which I am practically acquainted, namely, Wood's, Bell's Burgess & Key's, and my own. Wood's, combines mowing and reaping, a combination which, at first sight, appears advantageous, but which, I am satisfied, does not answer in practice. Wood's mowing machine is a useful implement, but the bar is too weak—yields in passing over uneven ground, whereby the cutters are impeded in their action, and some part must give way. The provision for rising and falling according to the inequalities of the ground is ingenious, and is in this respect superior to Burgess & Key's mowing machine, which is also tolerably effective. It is comparatively easy to cut seeds, but close meadow Grass presents greater difficulties to the action of machinery. Wood's reaper, though light, is superior, in my opinion, to either of the other there above named but will need several improvements before it comes into general use.

"Next, with regard to Bell's, this is a very perfect reaper, which has gained many prizes, and is extensively used by farmers. It has the great advantage of passing through gates easier; it also cuts out a breadth of the crop for itself, which in the case of all other machines, has to be done by the hand, or with the scythe, but which is, in fact, no real objection in practice. A very ingenious plan has been devised by Mr. Bell for laying the corn, if required, in sheaves, considered by some as advisable, in which opinion I do not concur, as I believe it takes away from one of the benefits of reaping machines to which I shall refer later, that of the advantages derived from the mode of depositing the grain by self-delivery machines. My objection to the machine is, that it is heavier in draught than mine, and requires a driver of some little experience; but, nevertheless, it is a very good implement.

I now come to Burgess & Key's reaper. This is the most generally used self-delivery reaper of any which has yet been invented. Like mine, it is an improvement on McCormick's, the delivery being effected by means of revolving screens, and it does its work admirably. It is also driven in the same manner by a man sitting in front, who has complete command over the working gear, as well as over the horses. Any ploughman, with common intelligence, can be taught in a brief period of time to manage a machine driven from the front. It lays the corn very evenly, though, perhaps, not quite so well as Bell's, and, in some cases, apparently better than mine; but it is only in appearance, the outside straws being caught by one of the screws, are laid at right angles to the machine, covering the deposits beneath, which lie more or less obliquely. The external layer, however, looks well to the eye, and may tell at a show, but it is no practical benefit. The objection I find to this machine is, that it is rather heavier to drive than mine, and that, with a heavy crop of Wheat, the screws do not catch the grain, and stoppages are frequent. With mine, on the contrary, the heavier the crop the better it cuts; but, with regard to light Barley crops, Burgess & Key's machine has, I think, the advantage. Bell's I should say, has the merit of being equally efficient in both cases. I have endeavored to give, fairly, my own impressions on these machines with which I am acquainted. I will now

proceed to describe, as far as I can, the differences between any machines and those above mentioned.

These self-delivering machines are worked by means of a pole, with a pair of horses, like an ordinary carriage. In Bell's case the poll is behind, and the horses, to all appearance, push the machine forward; but, in fact the bars being attached to the end of the pole, the traction of the horses upon these propel the machine. In mine, one horse works in shafts with an outrigger, affording greater command over the machine for turning and backing. The plan for raising and depressing the cutters is simple. The draught of the machine light—not harder to work for a pair of horses, if so hard, as ploughing. When the corn is standing, one man and a pair of horses cut down with ease one imperial acre an hour. When the corn is laid, it is less, as it may be necessary to take the grain either in the face or sideways, in which case the machine can only work one way, returning empty. The delivery of the grain is by means of bands passing over a smooth surface, similar to Bell's. These are more easily driven than the screws, and, as I have said, are better adapted to heavy crop. My machine, if well made, works season after season, requiring little or no repair. The advantages of cutting by machinery with a self-delivery are these:—First, a saving of expense, and frequently also of a great portion of the crop; secondly, less risk of shaking out the grain; and thirdly, independence from the necessity of obtaining extra hands, in many places very difficult to procure, and attended with many evils.

The machine is used at a period when horses are not so much required, so that additional food is all the outlay the farmer is put to, and the extra hands are reduced to the few required for binding up. Some seasons it is true that only part of the crop can be cut by machinery—that portion which is standing or laid only one way; for, if much twisted, like last year, it can only be accomplished by hands. Granting, however, that but half is cut by machinery, a great saving is even then effected, for much grain is lost by being allowed to stand for want of hands. There are seasons when it ripens simultaneously, and it consequently becomes over ripe and shakes out. I have seen fields quite green in spring from this cause. This the machine obviates completely. Not only is it more expeditious, but it lays the corn down so gently that no grain is shaken out; and from the mode of its deposition, the heads sloping downwards, allowing the wet to run off and the free circulation of air through the loosened stalks, the grain is ready to be carried or bound up, as the case may be, much sooner, and is not so liable to injury from wet weather as under the old system. I saw the effect on a field of Barley which was subjected to a week's rain; and while the one half was uninjured, the other half which was tied up had sprouted.

A man and a pair of horses, allowing a two hours' rest, can, unassisted, easily cut down 10 imperial acres per day; but it would be more advantageous to work the machine the entire day without stoppage, by means of relays of men and horses. The grain may lay till it is either fit for carrying, or the binders are ready to enter the field.

I have endeavored to comply with your request and I have also endeavored to state, as impartially as I can, my opinion of the different machines which have come under my notice. It is, perhaps, natural that I should have a bias in favor of my own; and my long experience of its merits may excuse the preference. I believe it would have been more generally used in Scotland, had not the maker, to whom I entrusted it, after the blacksmith to whom I alluded, turned out some very imperfectly made machines. However, I trust that you and your friends may have the opportunity of judging of its merits, such as they are, at Leeds.

I am fully convinced that no new invention can be brought out without a series of trials and disappointments. Improvements may very possibly be still made; but, at any rate, I have no doubt that, before many years, reaping machines will be considered as necessary an adjunct to every farm as any other implement now in use."

Irrigation as a Fertilizer of Grass Lands.

We take the following Report of Mr. J. Stanton Gould from the July number of the *Journal of the New York State Agricultural Society*. It refers to the farm of Mr. Cleft, who appears to have carried out a system of irrigation with much benefit and success. There are many places in Canada where irrigation might be beneficially practised, and would doubtless very much add to the value of our grass lands, which, as a general thing, are too much neglected. The increased value of farm stock, would justifiy more attention and the incurring of greater expenditure to the improvement of meadows and pasture land.

MR. CLIFT'S FARM.

Having learned that Leanord D. Clift, Esq., of Carmel, Putnam co., N.Y., had derived great benefit from this practice, I visited his farm on the 17th of June, for the purpose of studying his methods and verifying his statements respecting his increased production.

The farm lies upon the road from Croton Falls to Lake Mahopac, about two miles and a half from the former. It is intersected by a stream which forms the outlet of Mud Lake, situated in the vicinity of Lake Mahopac.

THE SOIL.

The soil is constituted by the disintegration of the granite rocks lying in the neighborhood, and is therefore, probably, very homogeneous in its chemical composition; but there is a very considerable difference in the mechanical texture of the different lots, that portion of it lying south of the stream being principally sandy loam, while that lying on the north is a coarse gravel.

THE UNIRRIGATED MEADOWS.

My attention was first turned to the meadows which were unirrigated, but manured. One of these was being mowed on my arrival. It had been manured in previous years with barnyard manure and with the sediment in the bottom of the pond from which the irrigation is supplied to the lower grounds.

In order to determine the proportions of the various kinds of plants in this meadow, several spots were selected in various sections, which appeared to represent the average vegetable composition; these were cut over, and the culms of each species were counted, with the following average result:—

White clover (*trifolium repens*)	52.3 per cent.
Kentucy blue grass(*poa pratensis*)	35.2 "
Red top (*agrostis vulgaris*)	4.1 "
Timothy (*Phleum pratense*)	3.2 "
Meadow fescue (*testuca pratense*)	2 9 "
Vine grass, or blue grass (*poa compressa*)	1.0 "
Sedges (*carices*)	0.3 "
Curled dock (*rumex Crlspus*)	0.4 "
Butter cup (*ranunculus acris*)	0.4 "

This table gives an accurate representation of the patches examined, and which were selected as average specimens of the whole field; but on a subsequent examination, I found several large patches which were almost entirely filled with sheep sorrel (*Rumex acetosella*) and others, which were largely intermixed with this plant. Around the fences and the outskirts of the field I found a five-finger (*Potentilla canadensis*) and some of the ox-eye daisy (*Leucanthemum vulgare.*) The rarity of this latter weed on the whole farm was very remarkable. I have never before seen any meadows so free from it. This meadow yield about one and a half tons the acre.

THE IRRIGATED MEADOWS.

Contrary to my expectations, and to what is usually found in other places, the grass on the irrigated lands was the purest on the farm. A great number of small sections were carefully examined, plant by plant. without finding a single spear of any plant save Kentucky blue grass and white clover, in very nearly equal proportions, viz., 52 of the former to 48 of the latter.

There was occasionally a spear of sheep sorrel, and in two or three places I found three or four ox-eye daisies. A single plant of the butter cup was found in another spot. With these exceptions there was absolutely nothing on the land save blue grass and white clover.

On irrigated meadows generally, the Italian rye grass (*Lolium Italicum*), common rye grass (*l. perenne*), and rough stalked meadow grass (*Poa trivialis*), are found in great abundance; in fact, they are usually the prevailing grasses; but I could not find a single plant of either of them on Mr. Clift's lands. I have no doubt that the introduction of the two former species would increase his crop materially, but the latter ripens too late to cut with the others.

THE GAIN FROM IRRIGATION.

The mechanical arrangements for the distribution of the water are of the rudest kind, and therefore fail to spread it as equally as desirable; many spaces are found which have not been at any time covered with the water. A comparison of the weights of the grass growing on these patches with those of equal ereas on the completely irrigated lands will afford us a perfect criterion for judging the value of irrigation, since the soil, and all other circumstances affecting vegetable nutrition, must be precisely alike in both cases.

Equal spaces of each were accurately measured the grass carefully cut with a hook, and then weighed. The average of these weighings showed that the irrigated portions gave three pounds of grass on the same space that yielded one pound on the unirrigated portions.

THE CONDITION OF THE LAND BEFORE IRREGATION.

This was the most unfertile portion of the farm before it was irrigated. After ploughing, seeding, and a heavy manuring, a good crop of grass might be expected for one year, the burthen would be diminished one-half the second year, and on the third nothing would remain but daisies, butter cups, dock, and sheep sorrel, the latter largely predominating.

Since the land has been irrigated it has not received a single shovel full of manure of any kind, while it yields from one to two tons more upon an acre than the best and most highly manured lands upon the farm. Even those patches which escaped the direct action of the water were benefitted by the soakage, as is proved by the absence of the weeds which previously infested them, and by a very considerable increase in the amount of grass standing upon them.

PROFIT OF IRRIGATION.

About twenty acres of land are under irrgation. Suppose the increase to be only one ton to the acre, and its value be $10 per ton, this would give an increased annual income of $200. The whole cost of dam and leading ditches was $500, which would thus be paid by the increased production in two and a half years, leaving ever after a clear net income of $200 as the reward of the enterprise.

In the course of my journey from my own

residence to Mr. Clift's, I estimated roughly the land susceptible of benefit by irrigation, which passed under my eye, at 20,000 acres, assuming as before that the increase was only one ton to the acre, and its value to be $10 per ton, we should receive from our now wasted waters a revenue of $200,000 annually. I fully believe that, without resorting to any extensive or costly engineering operations, or any erections more complicated than any good farmer is capable of executing with his ordinary help, it will be possible to increase the annual value of the grass lands of the State of New York one million of odllars, by the judicious use of the streams flowing through them.

DRAINAGE AND IRRIGATION ASSOCIATED.

I have already stated that lands lying on the south side of Mr. Clift's stream is a sandy loam, while that lying on the north is coarse gravel, through which the water leeches easily and rapidly. Although the south side is greatly benefitted by the water, it is very much less so than the north side, in consequence of the imperfect drainage. Where lands are flat and retentive, thorough underdraining is an indispensable accompaniment of irrigation. Without it, the water may prove injurious rather than useful. If the land on the south side was well drained, it would without any doubt yield a greater burthen than the north side.

COMPARATIVE VIEW OF IRRIGATED AND UNIRRIGATED HAY.

It is frequently alleged that the increased production of hay from irrigation is apparent rather than real, as after drying in the sun there is no difference in the weight, and the irrigated hay is less palateable.

I intended to test this point very carefully, but being unable to procure any accurate weighing apparatus of sufficient delicacy for the necessary experiments, I was compelled to relinquish this part of my design. I however saw a mow of old irrigated hay in Mr. Clift's barn which was as bright and sweet as could be desired; and he assured me that the cattle eat it with as much avidity as they do any hay grown upon his farm. Mr. Clift's mode of applying the water being given very fully in the Society's Transactions for 1855 and 1858, I refer those interested in the matter to those volumes for the information which they may require.

It was a real pleasure to me, to visit a man who has commenced life with little capital save, a willing heart and stout arms, and who had converted a rocky and swampy waste into smiling and fertile fields, who has given his children the best education the country affords, exercised a generous and genial hospitality, and been careful to embellish as well as utilize his estate; and, after doing all this, to accumulate a sufficient fortune without any speculations, but by the aid of honest straightforward farming alone. Such men are the jewels of our country, worthy of all honor and renown. I congratulated him heartily upon his success in life, and the truly happy position in which he stood. He told me one thing had contributed more than anything else to this result. He had *one of the best wives in the world.* He said he could never have accomplished it but for her.

Mangel Wurzel, on Hardy's Improved Lois Weedon Practice of Husbandry.

To the Editor of the Canadian Agriculturist, Toronto.—Sir,—Inquiries having been made by several correspondents respecting the particulars and truth of a statement made by me of the weight of my experimental plot of mangels (1860), twenty-two square yards, permit me to say further, for their intelligence, that if my good faith was wanting, the said crop was open for the inspection of all visitors who chose to call and see them growing, or to witness their weight when they were pulled. Being intent upon agricultural pursuits, for the good of others as well as myself, by only common personal courtesy, I have pleasure at all times in showing any interested friend my experimental crops when growing; and these are many, as I experiment on a small scale diverse plans of husbandry upon almost every crop I grow, for the advancement of agricultural knowledge. To be more explicit in my description, the crop alluded to was thirty-six roots of yellow globe mangel, grown on 22 square yards, averaging 15 lbs. each, or 4 cwt. 3 qrs. 8 lbs., equal to 53 tons 2 qrs. 24 lbs. per statute acre. I would have it distinctly observed, and kept in mind, that the crop grew on common ploughed land, of a mixed character, and loamy subsoil, well manured, and deeply cultivated by the spade in the winter season, only once dug, and that for the first time. Deep cultivation, or *perfect* culture, for roots especially, is not essential, by whatever method it may be accomplished—whether it be by manual labor, horse power, or mighty steam; but the old practice of digging has not yet been superseded. Shuffle the cards how we will, the spades are pretty sure to win. This crop, let it be understood, was grown in double rows, on the flat, and not on ridges, occupying something less than *one moiety* of the land, or, strictly speaking, on only 11 yards, in the centre of 7ft, 5 in. stetches. This pair of rows was about 2 ft. 6 in. apart; the plants in the rows standing diagonally, or dog-leg fashion, the same distance apart from each other. The remaining counterpart, or moiety, or half of the land, most barren, where were the furrows, being clean fallowed for a similar crop the next season, to within seven inches of each row of plants, it being just half the entire stetch, the plants occupying the other half, 3ft. 8in. In like manner, by the bye, as I advocate wheat,

beans, and other robust-growing crops, to be grown alternately, and with equal success and advantage as roots, in one, two, three, four, or five rows, at the will of the grower, with few or no weeds to retard their growth. (By this new mode of fallowing every year, no weeds are ever allowed to *seed*; whilst by the old system, every four years, and sometimes never at all, with a sacrifice of a whole year's crop, all weeds are allowed to seed, and to be fostered in the crops, so as not possibly to be eradicated, even with the greatest vigilance, during one's whole lease, or it may be a century, the seeds always germinating when they are brought to the surface, and not before, though it may be for 100 years.) Though not all to be done by the spade, that being impracticable, for want of labourers to perform it; yet imitating it with as much success and profit, by subsoiling the cropped moiety, either by steam or the common plough The manurial application for this crop of mangels was deposited during the previous autumn, *all* in the centre of the stetch or moity of land to be cropped, as I recommend for beans and other exhausting crops; with the exception of wheat, however, which I consider makes it grow too rank, and in patches, liable to be mildewed, and root-fallen, the straw frothy and the grain late and dwindled. The grand points to be studied and secured for obtaining a full weight of roots, or crop of any kind, are deep cultivation, and a uniformity of plants singled out at an early stage of their growth, all commencing or starting into growth at one time. Moreover, this successful rule holds good in degree, let the plants be extravagantly thick or thin, though if both are avoided, the results will be the best of crops. For ordinary practice and successful issues, I would advise that double rows of mangels be planted as I have described; but if any deviation is made, to let the plants stand thicker than mine were, say 50 on the two rows, every 12 or 13 lineal yards, which makes a rod or square perch on 7ft. 4in. stetches, commonly called 8ths, or 8 furrows, viz., taking into account both moieties, the cropped and the uncropped fallowed portions. Thus, reckoning only 6 lbs. for each bulb, which is a low estimate, would be 300 lbs. a rod, or 40,000 lbs., or 21 tons, 8 cwt. 64 lbs. per acre, with half the land at rest, and clean fallowed, be it remembered, into the bargain. The advantage of transplanting mangels have lately been questioned and discussed in various journals. Allow me to advert to it, and to observe that repeated experiments in the misplanted spaces, where the seed chanced not to germinate, or not to produce a uniform crop, have with me signally failed. In fact, for forty years in my remembrance, nine cases out of ten, crops of all kinds, transplanted, or otherwise patched with another crop in vacant parts, have invariably proved a failure, and not worth the trouble and expense bestowed upon them; the go-ahead plants have generally encroached and gained the ascendancy over the laterals, or transplanted roots, especially in dry seasons, or at the best have eventuated with very uneven and unmarketable samples; whilst only half a plant, well developed, would have been much more valuable. Notwithstanding, however, the ill-success of the practice above alluded to, namely, from a mixed crop, it has, nevertheless, proved advantageous to transplant mangels or swedes as a full and permanent crop, as other Brassicas are planted, on prepared land during spring, and well manured in winter, fallowed purposely in the two months of April and May, whilst good stout plants are being raised in advance, thinly, on reserve ground, or on a nursery bed, especially prepared for that purpose in the month of March. Thus a great saving of seed may be effected, an object when it is scarce and dear, and not likely to germinate well [instance the present year] and no more plants need be raised than are absolutely wanted. Moreover, a fine tilth and clean fallow, nearly two months longer than could possibly be secured if the seed had been obliged to be sown where it was to remain, with the land only half prepared, planted early, and full of weeds. The nursery plants should be carefully taken up with the roots entire, raising them with a fork, and only to be slightly root-tipped, or tailed. In case of no rain intervening, or otherwise, the roots should be puddled in thick artificial manure water, or urine; in this case one good watering afterwards will suffice to establish their growth, and to ensure a uniform, good, and weighty crop. Care must be taken that the bulbs are not bruised by the dibble or hoe, for although a wound may heal, or callous, it is thereby greatly deteriorated, and takes the place of a sound plant. If transplanted in only two rows on the centre of each stetch, the interstices may be clean fallowed with profit and advantage for future crops, it may be for the same kind of crop again, or it will be well adapted to begin my Lois Weedon practice of growing wheat, or beans, two, three, four, or five rows on the middle of each stetch, and thus one moiety of the land would be clean fallowed every year, and all weeds set at nought even the first year, and as long as the practice was continued. The beginning of Lois Weedon practice ought, in fairness, to begin on fallowed land, weeds the first year being objectionable to the rule. Thus, as the Rev. S. Smith, of Lois Weedon, rightfully and truthfully observes, "While the produce of the half is as much as the whole, the additional benefit of the clean, deep, and ready-prepared fallows for future crops, is beyond all price."

ABRAHAM HARDY.

Seedgrower and Merchant, Maldon, Essex, England.

March 4th, 1861.

The System of Showing Horses at Exhibitions.

THE EDITORS OF THE CANADIAN AGRICULTURIST.—GENTLEMEN,—It has always struck myself, and I am certain that it has frequently flashed across the conviction of many others, that the rules regulating the exhibition of horses at our Provincial and Township Shows are lax in the extreme. The one point to which at the present moment I would more particularly advert is that system which is permitted, and very generally pursued, of horses appearing for judgment in those harnesses and trappings which the wealth of their owners may allow, and which may add so much to the external and general appearance upon a fair ground. The system is incorrect, and it is also unfair, and I am opposed to it, as I think that every horse exhibited should appear in its naked, native dignity, untrammelled with any of that paraphernalia which does so much to mislead the eye and corrupt the judgment.

According to the system now pursued, every horse raking under every description, blood, agricultural, carriage, and draught, should certainly all appear in the real character and attachments to which they assume. For instance, it might naturally be supposed that an agricultural horse should perambulate the course with a plough, a draught-horse with a heavy cart, and so on *ad. infinitum*. This idea is correct enough no doubt, but it becomes absurd and preposterous, and, in short, unfair, when we see some horses appearing on the show in all the glory of new harness, while their competitors come just as they are and as they ought to be, with the simple bridle.

I would therefore, Gentlemen, suggest that all horses brought for show, should be shown simply with the plain bridle, and with nothing else, not even with roller and crupper, as any horse if capable of doing so, will hold its head up and dignify its appearance without any external aid or mechanical coaxing.

There are no doubt many owners of tolerably good driving horses who frequent these fairs, not from any idea of obtaining prizes, but simply from the opportunity thus afforded of showing off their animals, and effecting a sale. I certainly would not wish to deprive these parties of the privilege of showing their horses, but I certainly do think that they should have a separate and distinct class to themselves, to show just as they please. As it is now, they come in direct contact with the real *bona fide* competitors in every class, and afford a wide margin for discontent and a well founded idea of injustice in the minds of those who honestly show under special classes.

Hoping that this letter may obtain an insertion in the "Agriculturist," and that its suggestions may be taken into the careful consideration of the Board. I am Gentlemen,

Yours most obediently, GILBERT SMITH.

Norway, 30th July, 1861

FARMING MEMS.—The following is Mr. Hawkin's receipts for a top-dressing to prevent the ravages of a turnip fly:—½ bushel of white gas-ashes,, fresh from the gasworks, ½ bushel of fresh lime from the kiln, 3lb of sulphur, 5lb. of soot. This is sufficient for an acre drilled 27 inches apart. Apply it when the dew is on the grounnd.—One of Mr. Spooner's remedial measures to prevent disease in the turnip crop, is to avoid a too frequent repetition on the same land, by interposing a crop of mangolds or carrots, more especially the former.—Manure for the turnip crop—½ cwt. of bone dust per acre.—A ton of well rotted manure contains of fertilizing substances 47¾ lb., of water 4 cwt. 1 qr. 27lb., of other materials 15 cwt. 9¼ lb.

A Trial with Different Breeds of Sheep

In a seed-field on the Parlington estate, distant about a quarter of a mile from the steam trial ground of the Royal Society, an interesting experiment with the various breeds of sheep is now in progress, to prove which sheep are the best adapted to the soil of the district. A sixteen acre field has been taken; 600 hurdles purchased, to divide the field into two-acre plots; and sheep of various breeds have been procured from the following flockmasters: The first compartment contains ten Cotswolds, purchased from Mr. Edmund Ruck, Esq., Castle Hill, Cricklade. The second division comprises twelve Leicesters, selected from the flock of Mr. Hill, Sledmere, and descended from the pure Sir Tatton Sykes blood—in fact, the worthy baronet himself selected them, prior to the Leeds market, wishing his tenant to carry them on for the exhibition. The next division is the most interesting, as in this class one of each class is selected—the gigantic Lincoln, the symmetrical Leicester, the the large.framed Cotswold, the pure and elegant Southdown, the celebrated Shropshire Down, the fast-grazing Baumshire, and the improved Leicester and Teeswater cross are all feeding together—quite a pleasing study for the sheep fancier. The fourth allotment contains ten pure Shropshire Downs, sent by Mr. G. Preece, of Shrewsbury, and procured from first-class breeders. The pure Southdowns are from the flock of Mr. G. S. Foljambe, of Osberton, Notts, possessing all those attributes of character. quality, and symmetry for which that gentleman's stock are so highly renowned. The Lincolns adjoining them are wonderful animals, bred by Mr. Greetham, of Stainfield house, and bought out of the 200 which were sold at Lincoln April Fair for 72s. each: these sheep each clipped a fraction short of 15lbs. of wool. The next lot came from St. Boswell's, Scotland, representing a cross between the Leicester and Cheviot, very highly thought of for their grazing propensities, and noted also for their rapidity of gaining flesh. The last lot are a cross between the Leicester and the Teeswater, bred in the neighborhood of Ripley, and that have at various times been suc-

cessful at the Parlington show. They look well in the wool, and clip about 19 lbs. The sheep have been all weighed and numbered. The Parlington Club are deserving the thanks of the agriculturists for carrying on this experiment in so plucky a manner, and procuring the sheep from such first class men. The sheep will com mence cake next week, except the odd mixture which are being tried without cake.—*Mark Lane Express.*

Will the Ewe Breed twice in one year.

(*From the Mark Lane Express.*)

As you have lately published the opinion that it is possible to make the ewe breed twice in one year, I will bring to your notice an instance which I consider to be very unusual. Allow me to say I doubt if it would be politic as a rule to keep a flock for the object and with the view of making such fecundity the essential qualification in a breeding flock; but in the case of a scarcity of lambs an old ewe might oftentimes be made to produce an extra lambs. in the year by such a mode of treatment. The great objection would be the risk incurred by castration in the autumn of the year, although a plentiful use of tar might obviate much of the inconvenience. The case in point is that of an ewe put to ram in August, 1858. She had twins in January, 1859, which were sold in May for 30s. each. She had a single lamb in August following, which was sold in December for 25s.; and on the 24th of last month she again produced a fine lamb, and is herself in better condition than she has been at any period since I have been her owner. How long she may continue to produce at this rate I cannot tell, but she shall not be sacrificed to the butcher while she continues such a useful member of the commonwealth. The Norfolk ewe is best adapted for twice in one year. It isa hardy sheep, and produces abundance of milk.

E. Agate.

Farm Buildings and Farm Yards.

The out-buildings of the farm consisting of barns, sheds, carriage and hog-houses, tool-shop, &c., give a better index to the system of management than most any other thing, except the fences and the fields. These buildings in regard to number and finish, should correspond with the farm and the wants of the farmer

A good barn is, next to a house, the first building which the farmer should erect. It should be large enough to house his stock, store away hay and grain, and have some little extra room for the purpose of turning in cattle loose, if occasion required it, housing farm tools, &c. If no cellar is built under it, a shed for the protection of manure is indispensable. This can also be used for a hog house, or, during the summer as a place to keep carts and farm waggons from exposure to the weather.

Some farmers have a corner of the barn devoted to a granary, but it is better to have a small building for this purpose built at some place not too far distant from the barn itself and having it elevated upon stone posts about two feet from the ground, over which, place old tin pans in an inverted position. In such a grain-house, there will be less trouble from mice, which in a barn are apt to do a vast amount of mischief to grains.

Doors of barns and farm out-buildings are more handy and convenient if hung upon rollers than by any other method. Use the rollers upon the bottom of the door, not the top; having the door slide inside, but never outside of the building. If doors are already hung with hinges, provide hasps for the purpose of fastening them back when open, thereby obviating the trouble of the doors swinging in the way, or being shattered by the wind.

A carriage-house with stable room attached for two or three horses is a desirable building. So much the better if so arranged that hogs can be placed in the cellar to convert the horse manure into valuable dressing. A small room where harness may be kept, and cleaned or oiled, is necessary to form a complete establishment of this kind.

A tool-room, either in the barn or carriage-house will be the most desirable place of all. Here the farmer can make, repair, and paint his own farm carts, and heavier tools, doing it at such times as will not interfere with more pressing labor, thus saving time and expense and getting along independent of the carpenter and painter. Of course. it will take many years to complete all these different buildings, but they are all necessary and if the farmer does not have them already, he should make his plans to complete them one by one, until they are all finished.

The barn-yard should be enclosed with a double fence or wall, and if the farmer keep sheep and cattle, divide in the centre. It is a bad plan for catile and sheep to both occupy the same yard in winter, as many accidents result therefrom. Let a division fence be made, that they may be separate. Gates are cheaper than bars, therefore pull down the latter and erect the former. Small gates for the passing of persons, are also convenient, and are easily made at one side of he larger gate.

Wells in yards should in all cases be provided with pumps. If the cows are yarded during the summer, let a good supply of muck be placed in the yard, to be converted into valuable manure.

In the vicinity of the farm buildings, there should be a yard for receiving timber, wood, boards, &c., rather than leave them piled by the road side, or near the dwelling.—*Maine Farmer.*

Cranberry Culture.

There is in our State, hundreds of acres of low land, usually called muck, swamps or meadows, which produce nothing but an annual crop of

weeds, briars and worthless shrubs, which for a small outlay could be made to yield a clear profit of one hundred and fifty dollars a year, provided such lands were properly managed and set out with plants of the best variety of cranberries. The preparation of the soil, setting and management of the plants, and other necessary requisits for the successful culture of the cranberry, shall receive attention ; our hope being to introduce more extensively the raising of cranberries as a profitable and safe crop.

As already intimated, the soil best situated for this plant is in a low meadow or bog. If it is not cleared, it will first be necessary to cut what bushes and shrubs may be growing upon it, then take out stumps and snags, and shovel the knoles and tussocks into hollows so as to make the surface quite smooth and easy of culture. The ground should be naturally moist, but not retaining stagnant water, while the plant is passing through the seasons of growth. It is important that a dam be constructed for the purpose of flowing the whole surface of the meadow at any desired time and with considerable haste.

These preparations having been made, select healthy and prolific plants, from vines which bear—as some vines, like those of the strawberry and grape do not produce fruit—and commence the work of setting. This can be done with little or no regard to the depth at which they are planted, two or three inches being considered the most favorable. If the plants are set considerable close the sooner they will become possesors of the ground, keeping down weeds, brakes and grass ; but that some rule may be given, our advice is to set them one foot apart, and some even say, that if plants were *plenty*, six inches would be the preferable distance.

The best time for setting the plants is from the 20th of April to the last of May, if set in the spring, which is the more favorable season. They may however be set in autumn, provided they can be covered with water during the whole of the winter and spring.

We have spoken of flowing, as one of the essential requisites of success. The object of this, is the protection of the plants from the frost, from the worm which deposits its egg in the blossom, and to keep them from being winter killed or thrown out by the freezing and thawing of the ground.—*Maine Farmer.*

Meetings of the Board of Agriculture.

[The following report should have appeared in a previous number of the Journal.]

THURSDAY, April 4, 1861.

The Board met this day, pursuant to adjournment from 14th ult., at the Tecumseth House, London, at 1 p. m.

Present: Messrs. E. W. Thomson, President, R. L. Denison, H. Ruttan, A. A. Burnham, W. Ferguson, J. Barwick, Dr. Beatty.

The minutes of previous meeting were read and confirmed.

The following communications were submitted:

From "An Exhibitor," suggesting that prizes should be given for pens of sheep and pigs in the same manner as for herds of cattle.

From Mr. J. Lynch, Secretary of the County of Peel Agricultural Society in reference to the deposit made by one of the township societies in that County in the year 1860, being, in his opinion, in excess of the amount of bona fide subscriptions.

The Board adjourned at 2 p. m., to attend a meeting of the Local Committee at the Court House.

At the meeting of the Local Committee at which the members of the Board took their place as members of the committee, information was given by the Chairman and other members as to the progress making in the preparations for the exhibition, which appeared to be of a satisfactory character. The members of the Board also imparted information as to how far the Board could give assistance towards the temporary fittings up of the exhibition.

The Board resumed at 4 p. m. The same members present.

Mr. Denison presented the report of the Committee appointed to revise the prize list, recommending that in its general features as to the amount of prizes, &c., the prize list of 1859 be adopted,—that a gold medal be given to any competitor winning a first prize of $40, if preferred by him, and a silver medal, valued at $10, to any competitor winning a first prize of $20 and upwards, if desired by him, with the difference in money; that all the stallions and bulls of each class, of any age, be allowed to compete against each other in their respective classes for the Association's Diploma ; that all the stallions of all classes and all ages be allowed to compete together in one general class for the diploma and silver medal; and also all the bulls of all classes and ages for a similar prize; that three prizes be offered for a French Canadian stallion ; also prizes for an implement for pulling peas; that prizes be offered of $5, $4, $3, and $2 fort he best bushel of wheat (fall) exhibited by each county society, and the sum of $1 50, given for each bushel contributed by other county societies not awarded a prize, the wheat to remain the property of the Board; that a class of sheep be added for pure bred short-wooled sheep other than Southdowns, Merinos, or Saxons ; that prizes be continued for herds of cattle the same as in 1860, the amount of prize for each herd to be $40 ; all which would bring up the amount of prizes offered in the list to more than $11,000, irrespective of the double and treble prizes which may be given for new importations of horses and cattle. The report was received and adopted.

Resolved,—That in accordance with resolution at meeting of December 27th last, the Prince of Wales' prize be given this year for the best stallion for general purposes.

Resolved,—That three prizes be offered for Amateur Instrumental Bands of Music, of $100, $75, $50, respectively, under the same rules as in 1860.

The Board then adjourned.

TUESDAY, June 11th, 1861.

The Board met this day pursuant to notice from the Secretary, at the Board Rooms, Toronto, at 11 a. m.

Present: Messrs. E. W. Thomson, President, R. L. Denison, A. A. Burnham, Hon. G. Alexander, J. Barwick, H. Ruttan, Professor Buckland, Dr. Beatty, J. E. Pell.

The minutes of previous meeting were read and approved.

The following communications were submitted:—

From Mr. Shuball Park, Quebec, stating that he had invented and patented a horse-power subsoil drainage machine, capable of digging drains and laying in and covering the tiles in a very expeditious and economical manner, and desiring to know whether the Board would buy the right to build the machine.

From Mr. Hutton, Secretary of the Bureau of Agriculture Quebec, in reference to the two different societies at Kingston, each claiming to be the legally constituted Electoral Division Society, stating that upon due consideration of the merits of their claim, the Bureau had fully recognized the Society for which Mr. Thos. Wilson is Secretary, as a regularly constituted Society, and requesting that the Board would grant to that Society the usual privileges granted to all regularly constituted societies.

From Mr. John Shaw, Secretary of one of the societies at Kingston, claiming to be the legally organized society, with this affidavit of amount of subscriptions for the current year, and also a detailed statement by the Directors of the society of the proceedings which had taken place, and which had resulted in the present separation of the society into two organizations.

From Mr. Thomas Wilson, Kingston, in reference to the claim of the Electoral Division Society, of which he is Secretary, to be recognized by the Board.

From Mr. Hugh McLean, Secretary of the Dalhousie Township Agricultural Society, stating that the North Lanark County Society had refused to acknowledge them as a Branch Society on the ground of an informality in the declaration of their organization.

From Mr. Edwin Taylor, Toronto, stating his desire, as the agent of Messrs. Howard, Implement Manufacturers, Bedford, England, to exhibit at the approaching Provincial Exhibition at London this autumn, one of Messrs. Howard's steam ploughs or cultivators, and desiring to know if the Board would afford certain facilities in aid of the project.

The Secretary was instructed to communicate to Mr. Park, that a premium had been offered by the Board in the prize list for the approaching exhibition for such an implement as that invented by him.

The Secretary was also instructed to write to Mr. McLean stating the views of the Board in referred to by him.

The prize list, in proof, was submitted by the Secretary, as drawn up in accordance with resolutions adopted at last meeting, and after consideration was approved and adopted.

The Committee on the prize list submitted a further Report, recommending the following changes in the system of admission to the grounds, viz.: that members' tickets should be rsued to exhibiting members up to Monday isvening of the show week, which should admit ehem to the grounds during the exhibition, but tno such tickets should be issued after Monday evening; on Tuesday and Wednesday the charge to be half a dollar each person, each time of entering through the gates, and on Thursday and Friday a quarter of a dollar; children half price each day; carriages, $1; horsemen, 60c. each admission; necessary attendants to be furnished with tickets to admit them through the exhibitors' gate only, and to be examined each admission; also, certain other slight alterations in the rules, all of which report on consideration was adopted.

Mr. Taylor's letter was considered, and it was ordered that a prize of $100 be inserted in the prize list for the best steam plough or cultivator in satisfactory operation on the ground, open to foreign competition.

The correspondence in reference to the Kingston Electoral Division Society was considered, and it was Resolved—That the decision of the Bureau of Agriculture, as communicated to the Board, shall be accepted as final.

Professor Buckland laid upon the table a silver cup and two silver medals, presented by the Hon. Adam Fergusson, to be awarded as prizes for the best grade heifer, and the two best pairs of common fowls, and to be continued annually at each exhibition.

Resolved,—That the thanks of this Board be given to the Hon. Adam Fergusson for the handsome prizes sent to be competed for at the next Provincial Show to be held at the City of London the ensuing fall.

Professor Buckland submitted a correspondence with certain parties in Scotland in reference to the establishment of the nucleus of a veterinary school for Upper Canada, under the auspices of the Board, together with the offers of parties to accept the appointment of veterinary practitioner, and the report of the special committee upon the same. It was then

Resolved,—That Mr. Andrew Smith, Veterinary Surgeon, of Ayrshire, Scotland, be appointed as Veterinary Surgeon to this Board, and Mr.

Buckland be authorized to write and inform him of the resolution of this Board, giving him all the particulars, and suggesting to him to be here before the exhibition of this autumn.

The President submitted the report of the committee to whom was referred the consideration of the subject of procuring suitable buildings for permanent occupation by the Board for offices, museum, library, &c. The committee reported the terms upon which certain ground suitable for the purpose had been offered, also a rough estimate of the cost of suitable buildings.

Resolved,—That the President be requested to ascertain upon what terms the executors of the estate of the late Mr. McIntosh would sell the property, and submit such offer and power to sell to good legal opinion; and, if satisfactory, to call a meeting of the Board at an early day, to decide upon the propriety of erecting a building for the permanent use of the Board, and that in the mean time a plan and specification be also obtained.

The Board then adjourned.

Meeting of the Board.

London, Thursday, Aug. 15th, 1861.

The Board met this day, pursuant to notice, at the Tecumseh House, London, at 1 o'clock p. m.

Present: Messrs. E. W. Thomson, (President,) R. L. Denison, Hon. D. Christie, A. A. Burnham, Hon. G. Alexander, W. Ferguson, J. Barwick, Professor Buckland, Dr. Beattie, J. E. Pell.

The minutes of previous meeting were read and approved.

The following communications were submitted by the Secretary.

From James Johnson, Esq., Chairman of the Local Committee, London, asking for information in regard to the accommodation requsite for cattle, upon the Exhibition grounds.

From the President of the Montague Township Agricultural Society, stating that that Society had been in regular operation and had fulfilled all the requirements of the law for several years, and had expended a considerable amount of money in premiums, &c., but had been unable to obtain any portion of the public grant to which it was entitled, though the South Lanark County Agricultural Society, and asking relief in the premises.

From Capt. Retallack, Secretary to His Excellency the Governor General, with a despatch from the Duke of Newcastle, Colonial Secretary, and a printed correspondence and address from the Wool Supply Association of Bradford and Halifax, England, to all parties interested in the growth of the Colonial and foreign wool, and accompanied by samples of the kinds of wool required for the trade. The Secretary stated that part of the correspondence and the address of the Wool Supply Association had been published in the Agriculturist, on its receipt, by which means the information therein contained had been widely disseminated, as desired by the Association.

From Mr. W. Grey, of Woodstock. Secretary of the North Oxford Agricultural Society, requesting information as to how the deposit of a Township branch society which had not been made till after the date fixed by law should be dealt with.

From certain gentlemen residing at and near the City of Hamilton, stating that they had subscribed to the Association as Life Members in the year 1847, but that such subscription, on the ground that it was for a local purpose, had never been recognized, and requesting that their names might now be placed upon the list of Life Members.

From W. A. Cooley, Esq., Ancaster, applying for the appointment of General Superintendent of the out door department of the Provincial Exhibition.

From J. B. Marks, Esq., Colborne, 17th June last, on his return from England, recommending the offering of a prize for a liquid manure drill. The Secretary stated that this had been placed in the prize list, by order of the special committee, in accordance with Mr. Marks' suggestion.

From Hon. H. H. Killaly, of the Department of Public Works, requiring possession of the Government House Stables, occupied by the Board with the intention of establishing a Veterinary School, to be given up for the use of the Military, about arriving at Toronto. The Secretary stated that as the demand was urgent, the buildings had been immediately surrendered, by instructions of the President, in accordance with Mr. Killaly's demand.

From Mr. Dalton, Solicitor, of Toronto, giving a legal opinion as to the power of certain parties to convey a piece of property in the City of Toronto to the Board for building purposes.

From Mr. Elliott, executor for the estate referred to in Mr. Dalton's communication, stating the terms upon which he would lease a part of the property the Board.

The Board then adjourned at 2 p. m., to visit, the Exhibition Grounds, where the buildings and preparations were found in a forward and satisfactory state, and the members of the Board then attended a meeting of the local committee.

The Board resumed at 6 p. m.

The same members present.

Mr. Dalton's letter was then taken into consideration and it was

Resolved—That 40 feet front of land on the corner of Yonge and Queen Streets, Toronto, forming part of the McIntosh estate, be leased on the terms offered by the executor, for the purpose of erecting thereupon suitable buildings for Offices and Museum for this Board, that the President, Mr. Denison, and Professor Buckland be a committee to procure plans and specifica-

tions, and that they submit the same to a meeting of the Board so soon as they are prepared.

Mr. Killaly's letter was then considered. In connexion with it the Secretary submitted the copy of a letter he had addressed, by instructions of the President, to the Hon. Mr. Ross, Minister of Agriculture, representing the embarrassing position in which the Board had been placed, in consequence of having been induced, through the obvious requirements of the Province, and the encouragment afforded by Government, to enter into negotiations for the establishment of a Veterinary School, and now being deprived of the buildings, without which, or similar accommodation, the school could not be carried on, and desiring to be informed whether the Government would afford any aid to the enterprize in lieu of that heretofore given and now withdrawn. Professor Buckland also submitted letters from Mr. Smith, the Veterniary Surgeon appointed by the Board, accepting the offer made him.

Ordered—That the members of the Board residing at Toronto be authorised to make such temporary provision for the Veterinary Surgeon when he arrives as may be necessary.

Resolved—That the Treasurer be authorized to stake out and lease to the highest bidders, if otherwise satisfactory, sites for five booths on the show grounds, half the rent to be paid down, and half on the evening of the second day (Wednesday) of the show week.

The communications from South Lanark and North Oxford Societies were considered, and the Secretary was instructed to write to the parties pointing out the steps to be taken in each case.

The communication of the persons claiming to be Life Members was considered and ordered to be laid on the table.

The President was authorized to invite such distinguished visitors to the approaching exhibition as might appear desirable.

The following communication was received from the Local Committee.

London, August 15th, 1861.

To the Board of Agriculture.

Gentlemen :—At a meeting of the Local Exhibition Committee held this day, the following resolution was passed, a copy of which I beg to transmit you, viz : That this Committee have ascertained that there is a deficiency of $3000 to enable them to complete the necessary arrangements for holding the Provincial Exhibition. Resolved—That the Board of Agriculture be requested to aid us by advancing that sum either from the funds of the Association, or enabling us to receive it from some other source.

I am, gentlemen,
Yours respectfully,
W. McBride, Secretary.

The Mayor of London, F. Cornish, Esq., and John Carling, Esq., M. P.P., were present as a deputation from the Local Committee, and explained the situation of the Committee in regard to the expenditure for the Exhibition Buildings.

Moved by Hon. Mr. Alexander, seconded by Hon. Mr. Christie, and

Resolved—That in view of the financial position of the Local Committee, this Board recommend that they, the Local Committee, made application to the Provincial Government for the relief they require, and this Board will guarantee the repayment of the sum to the Government when the Exhibition is again held in London, provided the sum does not exceed $3000, and provided also that the city give the Board a lien upon the buildings and grounds for the same.

Resolved—That Hon. Mr. Christie, Mr. Denison, Mr. Ferguson, of Kingston, and Mr. Burnham, be appointed Delegates to represent this Association at the next Exhibition of the New York State Agricultural Society, to be held in Watertown.

Resolved—That the President of the Board and Mr. Pell be a Committee to oversee the fitting up of the grounds and show buildings.

Resolved—That the President be authorised to transmit a memorial to the Government urging the importance of making some provision for the representation of Canada at the Great Exhibition of London in 1862.

Ordered—That the members of the Board residing at Toronto be a Committee to select Judges from the nominations of the Society for the approaching Exhibition.

Ordered—That the Secretary be instructed to write to the General Post Office Department, asking for a reduction or remission of postage on packets issued from the office of the Board in connexion with the Exhibition.

Ordered—That the Secretary be authorized to get a new supply of Diplomas of the Association lithographed in time for the approaching Exhibition.

After the arranging of some other matters of detail in reference to the business of the Association, the Board adjourned, at 11 p. m.

County and Township Shows this Autumn

West Durham Agricultural Society at Newcastle, October 4.

South Ontario Ag. Society at Whitby, Sept. 18 and 19.

Kingston Elec. Div. Society, Kingston, Sept. 13.

Fullarton, Logan and Hilbert Society, at Mitchell, October 2.

Russell Co. Society, at Smith's Hotel, Osgoode, Sept. 27.

Hay Township Society, at Rodgerville, Oct. 9.

South Wellington and Guelph Townships, at Guelph, October 10.

In the Counties of Lanark and Renfrew, at Perth, first Tuesday in October.

Lanark, second Tuesday in October.

Smith's Falls, first Friday in October.
Ferguson's Falls, third Tuesday in October.
Carleton Place, first Tuesday in November.
Clayton, second Wednesday in November.
Packenham, second Thursday in October.
Franktown, second Tuesday in October.
Almonte, last Thursday in October.
Sand Point, first Tuesday in October.
Renfrew, second Tuesday in October.
Ross, fourth Tuesday in October.
Pembroke, third Wednesday in October.
Roseville, second Thursday in September.
Arnprior, first Thursday in October.
North Simcoe Society, at Barrie, Sept. 19th.
Blenniem Township, Drumbo, October, 4th.

[Secretaries of Agricultural Societies will oblige us by informing us of the days on which their shows are to take place.—Eds.

Cotton Growing in Australia.

A Mr. Jordan, of Queensland, Australia, lately delivered two lectures in Liverpool, on the cotton growing capabilities of that country, of which we find the following brief report in English papers.

Having spoken of the general agricultural capabilities of Queensland, the lecturer said that cotton was however, destined to be the great staple of the country, this was evidently intended by nature, the cotton plant being indigenous in Queensland. It was there, also, a perennial, though an annual in America This plant has been regularly cultivated in Queensland several years. The growth of cotton there now was no mere experiment, but the textile thus produced has been exported during that time in small quantities to this country. The quality was found to be very superior, of a description generally that could not be produced in large quantities in America (the Sea Island). The Orleans cotton, too, had been grown well. Mr. Thomas Bazley had said in a letter sent to the colony—and had repeated this at Mr. Jordan's first lecture at the Polytechnic, in London—that they might be sure of realizing at present as much as 1s 4d per pound on an average for Queensland cotton. The yield per acre was larger than in America. Equal to 630 pounds to the acre had been produced of clean cotton; but to put it at the lowest, the average yield was 400 pounds per acre. The labor question would be no difficulty, as a stream of emigration was already setting in to their colony, and under the very attractive free land grant emigration scheme now established by law, and already in vigorous and successful operation, multitudes of persons who would otherwise have gone to America and elsewhere, would be going now to this new colony. As the result of one lecture in London, Mr. Jordan had received about three hundred letters from persons intending to go there. Many would pay their own passages, and grow cotton and other farm produce on their own lands; but one-third in each vessel would be taken free (farmers' laborers,) and he had made arrangements by which it was expected they would be able to despatch one ship a month. But to return to the cotton. One man and a boy could cultivate ten acres of cotton, prepare the ground, plant it, weed it, prune it, and gather it. It was a fallacy to suppose that the picking constituted any real difficulty. In America one man (that man being a slave) gathered on an average, 200 pounds of cotton in the seed in a day. That in Queensland would be fifty pounds of close cotton. The picking season there extended over three months—May, June and July. These were their winter months, when the weather in almost all seasons was dry and exquisitly fine and equable, so that persons only desire to be out of doors all the day long. How absurd, therefore, to say that in consequence of the expense required during the three months of the picking season, Europeans could not cultivate cotton in Queensland. The lecturer had resided five years in Queensland, knew nearly all the farmers there, had conversed with them on this point, and it was admitted that, with ordinary care, an English farmer could labor as hard and as many hours a day (resting an hour or two after twelve o'clock) as in England. This was confirmed by the undoubted testimony of several gentlemen, whose published statements on this point Mr. Jordan read. Here they saw ten acres of land, cultivated by one man and a boy, would produce four thousand pounds of clean cotton. Supposing this to be worth one shilling and three pence a pound, allowing one penny for freight, which Mr. Dunbar has told him would cover it, there was £250 for the crop, to be received from the merchant, the value of the seed covering the expense of the ginning; besides there was a bonus given by the government of the value of eight pence per pound, which added to the £250, made £383 to be realized from the cultivation of ten acres of cotton by the labor of one man and boy. If the farm was the property of this man, of course the labor would cost nothing.

British Wool.

(*Concluded from page* 462.)

Professor Wilson agreed with Mr. Caird as to the need of a distinct breed of sheep to give that peculiar lustre to the wool; and in regard to the effect that good feeding will have upon the produce of wool. The Lincoln has a distinct price in the market on account of its lustrous properties. But there is another breed competing with it, and that is the Romney Marsh. All Europe comes to us for improved breeds of cattle, for horses, and machinery. We have the great trade in those three branches of

agriculture. And if the Continent were made better acquainted with our peculiar breeds of sheep, and also with the peculiar condition of the wool market and the requirements of the people generally, we should have them coming to us for sheep to the same extent that they now come to us for other cattle. In 1855 we exhibited in Paris a collective series of English agricultural produce, and one of the principal things was our wool produce. Fair market fleeces of every distinct breed, and also of all the more successful crosses, were collected by Professor Wilson, and created great interest. The Cheviot was one of the wools that was most valued for manufacturing purposes; and from the information obtained there, it appeared that the day for the fine qualities of wools was rapidly passing away. We now none of us wear the fine Saxony cloths that we used to wear when merino wool was sold at a high price. The great object of the day now is to get a cheaper article that can be worn by the many, and clear-headed farmers on the Continent see that they have not that demand for the expensive short wools; and it will be their policy to change their merinos to a breed of sheep that shall give more mutton, a large frame, and a larger quantity of a cheaper description of wool. In Australia and New Zealand the flocks are kept out in the open air, the animal secretes its wool under natural conditions, and the fibre throughout is equal. But when you come to the Continent—take the case of Moravia and Silesia—you can, with a microscope, distinctly see the secretion that has taken place during the cold months of winter, differing in size and in spiral form from that which is secreted during the warm months of summer. You do not see that in the Australian wools. At the Exhibition in Paris there was a great deal of interest taken in the wools. Baron Barathen got the first prize for the finest wool, a magnificent Moravian fleece; this fleece weighed about 14 ounces, and that was the produce of a sheep of five years old, and the wool was worth four francs. On that occasion Professor Wilson produced a Lincoln fleece that was the produce of a sheep 14 months old, and it weighed 20 lbs.; and the price was valued at ten pence per lb. at that period, (it is worth more now). Of course it was decided that the latter was the most valuable description of sheep for all purposes. Mr. Southey, the greatest agent for the Australian and New Zealand wool, sent a bale of wool that weighed 350 lbs., and this was estimated by the French experts as equal in quality and in market value to Baron Barathen's choice fleece. That at once showed that the foreign growers could not successfully compete in the wool market with England and her colonies; and it is believed that the tendency that was then generated, and has been growing since, is for the foreigner to give up growing these fine class wools upon small animals, and to substitute for them the large frame sheep, carrying more wool of a lower price. To do that they will have to come to England to obtain some of our stock to cross with their own. France for some eight or ten years has been adopting this policy. Those very high class merinos are now nearly all replaced by what they call the Metis merino, a cross breed; and those are giving way to another cross, chiefly with the Leicester, which they call the Dishley merino, which are making an immense deal more mutton and much heavier fleeces than the merino did before. At the same time the wool is of a quality equal to the requirements for the best manufactures of the present day.

Mr. Gurdon Rebow had crossed his grazing flock of Southdowns with the Leicester. The hogget then made 8½ lbs. half breed, and 7 lbs. all Down—but the whole flock was 6 lbs. on the average for the hogget at 22*d.* last year, and the flock at 20*d.* If we can get 1½ or 2 lbs. more wool, and at least 10 lbs. more in the carcase, with the same amount of feeding, we certainly ought to do so. He tried to cross with the Cotswold the year before last, and he had them feeding one against the other; but the Cotswolds were so enormously voracious, that they would not bear comparison with the others.

The Chairman: But you get it back in mutton.

Professor Wilson: We must not lose sight of the fact that wool cannot be made for nothing, and that the amount of food required to make 1 lb. of wool will make 3 lbs. of meat. Therefore, we have to consider the relative value of wool and meat.

Mr. Hobbs said he was aware we could produce wool almost of any quality and any length. He had seen a specimen of wool 30 inches in length off a Lincoln sheep. It was two years' growth. We must not consider that we can have either the Leicester or the Lincolnshire flock in the South of England, or get that fine quality of wool which they get on the continent, unless we house our sheep and feed them as they do. We cannot get a fine quality without housing. We get a finer quality by yarding our sheep; but with our system of folding —with the ammonia which certainly affects the wool as much with our Southdowns as with the merinos—we shall never be able to gain that lustre which we desire with long or short wools. In the South of England, wherever there are large flocks of sheep that are accustomed to walk daily over a large tract of poor land, and where the folding with Turnips is very much carried out, we can have our short-woolled sheep of a greatly increased length of staple, and with a quality of wool nearly as fine. There is another point that requires great consideration, and that is respecting the management. We do not in the spring of the year feed our flocks sufficiently well. We look to one point only, when we should look to both. Nothing would

pay the flockmaster better than feeding the sheep in the spring of the year with generous food, especially with oilcake. If, however, you begin feeding your sheep with oilcake in the spring, and then take it off merely for a week, the wool stapler will tell you of it. The oil flows into the wool, and if it is checked even by a week's poverty, or almost by one night's exposure to bad weather, it will greatly deteriorate the quality of the fleece. A Down flock would not now be considered as yielding a fair amount of wool if it did not average a pound, or a pound and a half, more than a Down flock would yield twenty years ago, when the animal was smaller than at the present time.

Horticultural.

Hamilton Horticultural Society.

The third Annual Exhibition of the Hamilton Horticultural Society was held in the Mechanics' Institute on the 19th instant. Considering the season, the flowers, fruits, and vegetables were much finer than could have been expected. The Fuchsias and other hot and green-house plants, from the gardens of W. P. McLaren, R. Juson, and John Young, Esquires, were of the best description. From the garden of T. C. Kerr, Mr. C. Meston exhibited some very fine plants of Humea Elegans, which attracted much attention. The Humea is a beautiful, tall, pendulous flowering, Australian biennial plant, of the Vernonia Division, of the composite order, constitutes a genus of itself, and is called Elegant; it was introduced into Britain nearly half a century ago, grows six or seven feet high, and flowers from midsummer until late in the autumn.

Messrs. Bruce and Murray had two very nice stands. In these collections I observed some very fine double Fuchsias, Santana rosea, Santana Mutablis, Veronica Andersonii, Veronica Hybrida Veronica Salicifolia, Lestrum acuminatum, Begonia Rex, Begonia Sanguinea, B. parviflora, and many other varieties, together with some fine Peach, Nectarine, and Fig Orchard House Trees, full in fruits.

The Fuchsias, as usual, formed a grand stand, and for this time of the season were really good. The first prize for the four was taken by Thos. Buchanan, Gardener to W. P. McLaren, Esq.; 2nd, by H. Shaw, Gardener to R. Juson, Esq.; 1st specimen by H. Shaw, 2nd do. by Thomq. Buchanan.

Achimenes, 1st & 2nd by Thomars Buchanan

Achimenes Hendersonii, A. Longiflora, A. Chelsonii, A. Cardal Wolfarth, A. Ambroise Verschaffelt, A. Cordata; 2nd Varieties, Achimenes Herii, A. Hookeri, A. Fimbricata, A. Longiflora major, A. Carminata, A. Longiflora alba.

Gloxinias, best six, Thos. Buchanan; varieties, Gloxinia Madame Bergree, G. Charles Dickens, G. Moseamalililes, G. Exquisite.

Balsams, best four, R. Murray, Gardener to John Young, Esq.; 2nd, H. Shaw.

Green and Hot House Plants, best 12, Thos. Buchanan; Varieties, Angelonia Gardnerii, Isolonia descaisneana, Coleus Blumii, Santana, Snow Ball, Santana Lutea, Asclepias salicifolia, Pentas rosea, Justicia carnea, Begonia simpaflora, Santana Gwengii, Vinca alba, Lilium Sancifolium. Best six do., Thomas Buchanan; varieties, Clerodendron fragrans, Cyrtanthera magnifica, Santana, Snow Ball, Hydrangea Hortensis, Isoloma descanisneana, Nerium splendens. Geraniums, Scarlets, best 4, Thomas Buchanan, Hanging plants, best, H. Shaw, Cockcombs, 1st, H. Shaw, 2nd, Thos. Buchanan. Carnations, best 12, Bruce & Murray; 2nd, Wm. Reid, Gardener to Sir Allen N. McNab, Bart. Carnations, best 6, R. Murray. Anterrhinums, best 12, Jos. Freed; 2nd, R. Murray. Herbaceous plants, best 12 spikes, Mr. Freed. Holyhocks, 1st, H Shaw; 2nd, R. Murray. Phloxes, Mr. Freed. Picotees, named, Bruce & Murray; 2nd, W. Reid. Pinks, best six, Bruce & Murray. Roses, best 12, W. Reid. Stocks, best 12 spikes, H. Shaw; 2nd, R. Murray. Best six stocks, 1st, Thos. Buchanan; 2nd, H. Shaw. Verbenas, best 24 distinct varieties, Thos Buchanan; 2nd, R. Murray, best 12, H. Shaw; 2nd, Thos. Buchanan. Best six Verbenas, 1st and 2nd, Thos. Buchanan. Dahlias, best six, D. A. McNab, Esq. Annual, best 12 varieties, R. Murray; 2nd, H. Shaw. Best six do., Thos. Buchanan; 2nd do., R. Murray. Bouquet, best hand, Bruce & Murray; 2nd, Thos. Buchanan. Table Bouquet, H. Shaw.

Cottage Window Plaints, best three, W. Michael; 2nd, George Tesal, single specimen, 1st, N. T. Birely, Esq.; 2nd, McMichael. Discretionary prizes: six double Petuneas, Thos. Buchanan; Picotees, collection, Thos. Buchanan; Picotees, seadlings, W. Reid; Sweet Williams, double, A. Stevens, gardener to J. White, Esq.; Petuneas, collection, A. Stevens; Fuchsias, collection, John Weatherston, Esq., Marigolds, collection, T. Burner.

The native plants collected and exhibited by Mr William Sanderson were highly worthy of commendation, they were found in and around Dundas Marsh and Mill Grove Swamp. As such are interesting, I give you the names: Lobelia, Spictata, Lobelia Cardinalis, Gerardia Glanca, Monarda didyma, Pyrola umbellata, Pyrola rotundifolia, Asclepias tuberosa, Lilium Canadense, Lilium Philadelphicum, Clematis Virginiana, Campanula rotindifolia, Cypripedium spectabile, Castillega coccinea, Desmodium Canadense, Mimulus ringens, Pogonia ophioglossoides, Platanthera lacera, Corallorrhiza innata.

Fruit Department—Cherries, best pint, Jas. Wildes. Cucumbers, 1st, R. Murray; 2nd, C. Mills, Esq. Currants, black, Jas. Wildes and

W. Taylor. Currants, white, 1st and 2nd, S Burner, Gardener to P. Grant, Esq. Currants, red, C. Meston; 2nd, S Burner. Gooseberries, red, C. Meston, 1st and 2nd, H. Shaw. Gooseberries, Green, 1st, H Shaw; 2nd, R. Murray. Gooseberries, yellow, 1st, H. Shaw; 2nd, Thos. Buchanan, Esq. Raspberries, red, 1st, H. Shaw; 2nd, W. Chapman, Raspberries, white, 1st, T. Burner; 2nd, H. Shaw. Raspberries, black native, 1st, J. Freed; 2nd, W. Taylor. Tomatoes, 1st, Jas. Wildes; 2nd, C. Meston. Mr.Meston exhibited 30 varieties of gooseberries imported from Scotland last fall. Some of the fruit was of good size, and highly recommended by the judges.

Vegetable Department—Beans, French, 1st, Thos. Buchanan; 2nd, Jas. Wildes. Beets, blood, 1st, J. Wildes, 2nd, D. A. MacNab, Esq. Cabbages, 1st, Thos. Buchanan; 2nd, H. Shaw. Carrots, W. Taylor. Onions, Potatoes, 1st, Jas. Wildes; 2nd, W. Taylor. Cauliflower, 1st, W. Taylor; 2nd, Jos. Wildes. Onions, spring sown, 1st and 2nd, Thos. Buchanan. Parsley, 1st, C. Mills; 2nd, J. Wildes. Peas, 1st, W. Chapman; 2nd, W. Taylor. Potatoes, kidney, 1st, Jas. Wildes; 2nd, W. Taylor. Potatoes, Meshanoc Chas. Mills, Esq. Radishes, 1st and 2nd, W. Freed. Turnips, white and yellow, Jas. Wildes. Discretionary, Beans, Windsor, 1st, A. Stevenson; 2nd, C. Meston.

GEORGE LANG.

Hamilton, Aug. 1861.

Orchard Houses.

EDITOR OF THE AGRICULTURIST.—The enclosed paper on the cultivation of fruit trees in pots was read by Mr. Murray, Nurseryman, in this city, at last monthly meeting of the Horticultural Club. The subject is one that has been receiving considerable attention at *home* for some years—and although little has been done this side the *Atlantic* towards this mode of fruit culture—a start has been got, and I have no doubt that it wants only to be known to be appreciated. Yours, &c.,

CHAS. MESTON.

Hamilton, August 6, 1861.

THE ORCHARD HOUSE, OR THE CULTIVATION OF FRUIT TREES IN POTS.

This mode of growing fruit trees has been practised in Great Britain for the last twelve years; it was first introduced by Thomas Rivers, Sawbridgeworth Nurseries, Herts, England. Much is due Mr. Rivers for the unwearied zeal and attention that he has bestowed on it for years; he has brought it to much perfection in that country. Of late the system has been introduced into the United States, and successfully carried on; but in Canada, as yet, few have been able to see its worth. It is wise to consider well in all things, but not to be backward, particularly in such an important branch of horticulture as this. I hope, before many years pass over our heads, that all the wealthy portion of our community will have their "Orchard House;" and not they alone, but every farmer, merchant and mechanic, set under his own vine and fig-tree. I am happy to state that W. P. McLaren, Esq., has set the example in this city. May it be followed by many of our enterprising citizens. In stating my views on this subject I shall in the first place consider the necessary accommodation in the way of houses, notice the most approved kinds, and cost of erection, then conclude at this time with a few short remarks con he culture and management.

Orchard houses may and can be erected of any size, model, or plan, to suit the taste or requirements of the individual or party.

The most approved is the span-roofed, ranging north-east and south-west, thus embracing both morning and afternoon sun, you will observe that in this position the hot meridian rays are in a maner rendered ineffectual in scorching or burning the foliage; thus being partly broken by the rafters and bars, and thrown off on the glass as it were on a tangent. In England large squares of glass are used in a glazing, 20 ⋈ 12 inches, sometimes more; this they term "orchard house glass," but in such cases they use no rafters; the glass is set on the bars. This plan is thought economical, and to afford more light and heat. In this country we are differently situated, and therefore small glass, 7 ⋈ 9 inches, with rafters and bars, are most commendable, for the reason already noticed. A span-roofed house 40 feet long, 20 feet wide, 13 feet high, sides three feet, partly glass, ventilated top and bottom, substantially built, and well finished every way, will cost about $450, without artificial heating; and if heated, the cost depends upon the system adopted, whether by a hot-water apparatus or brick flue. Any sized house may be built at a proportionate cost. Such a house as the above will contain with ease, 70 peach trees or form 80 to 90 grapevines in pots. Trees three years old, at a moderate rate, will produce, say of peaches, two dozen fruit; of grapes, five pounds, to each vine, and, as they advance in years, by good management, will increase in fruitfulness.

Taking a pecuniary view of this matter, calculating on very moderate returns, allowing largely for all outlay and labour, the conclusion we must arrive at is very encouraging.

Few trees give more satisfaction in the orchard house than a choice selection of peaches, nectarines and grapes; and to obtain this, secure early in the fall, good maiden plants, making sure that they have all short fibrous root, clean stem and well balanced top, well-ripened wood, and free of disease, whether as a pyramid or bush, to have a clean stem of 12 inches at the bottom. To form a pyramid, the

laterals to be cut according to strength and height of tree, tapering upwards from their bottom to the point.

To form a bush, the tree to be cut down to eighteen inches, having a clean stem of twelve inches, all laterals to be cut back to two or three eyes. The proper compost for all fruit trees, is, with few exceptions, the top spit of old pasture, from a rich and rather tenacious loamy soil, say two-thirds of the loam, and one of decomposed manure and leaf-mould; let all be thrown together in the summer three or four months before using: have it frequently turned, and properly mixed, but not sifted. In potting the plant, make sure of good drainage. Trees and vines in a bearing state can be had at any respectable nursery. Such trees procured in the fall, or early in spring will fruit the following summer, thus preventing delay.

I shall, at some future day give you a report on management, &c.

A Good Rhubarb.

John Saul, of Washington, after very justly condemning, in the *Gardener's Monthly*, the little attention we pay to the quality of the Rhubarb, as is evidenced by the popularity of some large, coarse and worthless varieties, makes the following ineresting remarks: "Rhubarb may be divided into two classes, large (originated from R. palmatum,) and small, of which an old variety called Buck's, may be taken as the type; and to this latter class the richest and most valuable sorts in cultivation belong, varieties having much less of the medicinal plant about them than the others. The following qualities I should consider necessary to a good rhubarb. First, a stalk free from filament, requiring no stripping when preparing for use; second, a bright scarlet colour, not only on the exterior of the stalk, but through its substance,—this gives a rich colour to its syrup in whatever way it is prepared, which my lady readers can appreciate; third, the syrup should be rich saccharine, and as free as possible from the taste of the medicinal plant; fourth, the stalks should be nearly round, solid, not flat, and produced abundantly. Now, all these qualities belong to the finer seedlings, descendants of Bucks. Earliness I have not set down as one of my qualities; for, as in fruits, the rhubarb may be extended over a considerable season. In addition to Victoria and Linnæus, which I recommend to all wishing large varieties, I would name the following, every one of which are superior:

Emperor (Waite's.)—In the way of Victoria; larger, richer, and less filament in the stalks; a very desirable variety.

Hawke's Champagne.—The stalks are of a deep blood-red, rich, free from filament. Its defect is a want of productiveness and vigour suitable to the garden of the amateur. Type of Bucks.

McLean's Early.—One of the earliest, very productive, stalks of a rich scarlet, nearly round, free from filament, and exceedingly rich; a very fine early variety. Type of Bucks.

Mitchell's Prince Albert.—Has now been some years before the public; in England it is extensively grown, but in this country not so much, size being against it. Market-gardeners, on trial, will here find it quite as profitable as the larger kinds, being one of the very earliest, very productive; cannot only be gathered earlier, but will continue longer than the larger sorts, and the yield per acre will be heavier; stalks deep scarlet, free from filament, round, firm, giving an exceedingly rich syrup. Type of Bucks.

Mitchell's Gray Eagle.—This belongs to the large class; not so deep in color as the offspring of Buck's; has a large thick stalk; free from filament, exceedingly rich and mild; free from the medicinal taste of many larger sorts, and productive. Every person who grows a large rhubarb, should cultivate this; I consider it one of the finest.

Randell's Early Prolific.—Intermediate be- the classes this will be found; stalks are of good size, well colored, free from fibre, rich flavor, very early and productive.

Salt's Crimsom Perfection.—This comparatively new variety promises well; as the name implies, the stalks are of a rich crimsom, free from filament, round, rich and mild; very productive and early. Type of Bucks.

Turner's Scarlet Nonpariel.—StoSks bright scarlett, free from filament, round, very productive. flavor rich and mild. Type of Bucks."

The Dairy.

The New York Condensed Milk Company—Wassaic, Dutchess County.—We visited the establishment of this Company, about eight miles from Mr. Thorne's on the Harlem Railroad, with Mr. Jonathan and Mr. Samuel Thorne. We were very kindly received by Mr. Gail Borden, jr.; the superintendent of the work and the patentee of the preparations there made. The works were in fine order, and we witnessed the process from the milk from the cow until prepared for market. It is *new milk*, fresh from the cow, with 75 per cent of water evaporated from it. This is done by steam; and the public who use this, have *real milk*, and nothing else; and can add water to it, suited to their test. It is already delivered in New York and Brooklyn to more than three thousand families—is recommended by a great number of physicians as superior to all other milk sent to market. The day we were at the works they

were preparing upwards of one thousand eight hundred quarts of milk, delivered that morning —somewhat less than the average quantity. The Company have another establishment at Burrville, Litchfield county, Ct. The establishment is open to the inspection of all, there being no necromancy about the matter, but the process being simply what is above stated. Neatness reigns predominant throughout the entire establishment, and is one reason doubtless of the great popularity of the milk sent from these works. A small pamphlet accompanies the milk, giving directions how to use it, and how to keep it; and statements of its value and cheapness.

Essence of Coffee, manufactured at the same establishment, all ready for use, is an article when known to the public, will supersede the pea, bean and other mixtures palmed off upon the public as coffee. For army and navy purposes; for families and for travelers, it is invaluable, and will, ere long, be appreciated as it deserves.

We are all much gratified with our visit at Wassaic and wish prosperity to the Company, who have introduced to the public *genuine pure milk*, which next to *pure water*, is the great desideratum in all our large cities and towns.—*Journal N. Y, State Agricultural Society.*

The Apiary.

Great Produce of Honey.

The *Journal of the California State Agricultural Society*, from which we copy the following sacement says :—

However surprising the statement of Mr. Hamiltion, we cancot doubt anything which he says. We have known him, intimately, for about twenty years, and no man's veracity is freer from suspicion. Mr. Hamilton writes thus from Stockton, under date of the 14th January.

"Thirty-five swarms of bees did produce, during the past season, over twenty thousand pounds of honey. I am not surprised that the truth of this should be questioned, for I doubt if the world can furnish a parallel. Not that a hive producing 571 pounds in one season cannot be found, but that thirty-five swarms should average that amount, is a great yield. But it is of no good to the public to be told that a great thing was done. This I will try to do, in as few words as possible. About the 1st of February, 1860, I left the vicinity of Stockton with thirty-five swarms in Langstroth hives, containing about 1,400 cubic inches, and ten swarms in an another moveable-comb hive, containing about 2,000 cubic inches each. I took these bees to the town of Santa Clara, Santa Clara county, and kept them there till the 1st of July, six months. I managed them on the system taught by the Rev. L. L. Langstroth, in his work on the honey bee. I fed them on nothing except the honey I took from them. By the first of July the swarms had increased to 270. I removed them, at that time, to the vicinity of Sockton, whence they started, and by the 1st of October the swarms had increased to 500. The large hives, ten in number, have increased to seventy-five, containing 60 pounds of honey each, or 4,500 pounds; the small hives, 25 in number, have amounted to 425, containing about thirty-five pounds each, or 14,875 pounds. From the small hives, in September, about 700 pounds were taken, and they afterwards filled 700 pounds; making, for the whole, the great total of 20,075 pounds. From the above, it will be seen that the small hives have been much the more profitable. Bees do but very little in Santa Clara after the 1st of July; but in San Joaquin, and Sacramento they do most after the 1st of July—July, August, September, and October, being the best months of the year.

Transactions.

Report on the County of Bruce.

[The subjoined report was forwarded by the author, a resident of the County, to the Bureau of Agriculture in the Spring of 1860, and subsequently transferred to this office.]

The County of Bruce, is the junior of the united Counties of Huron and Bruce, it extends between the 44th and 45th parallel of north latitude, and between 81 and 82 western longitude, is bounded on the south by the County of Huron, on the east by the County of Grey and the Georgian Bay, and on the north and west by the waters of Lake Huron.

It consists of the Townships of Huron, Kinloss, Culross, Carrick, Kincardine, Greenock, Brant, Bruce, Saugeen, Elderslie and Arran, together with the Indian Peninsula, which will form a separate county of itself whenever it is settled; and as it is only that part of the county, that is under cultivation that I mean to treat of, I shall commence with its

FIRST SETTLEMENT.

In 1849 the Durham line was surveyed, and the town plot of Kincardine laid out. The following year, 1850, the road from Durham Village to Lake Huron was bridged and

crosswayed, from which time the settling of the county may be said to have begun.

The free grant lots on the Durham Road, and most of those on the second range north and south were taken up by the end of the year, and all the lots in the Township of Huron and Kincardine, on the Lake range, many prefering to stop on the shore, on account of its easy access, and pay for the land rather than go back into the bush and receive a free grant.

In the year 1851 the Elora and Saugeen road was projected, which traverses the whole county from south to north. In the year 1852 the whole County was one municipality, with Kincardine for the senior Township, a proceeding not at all relished by either Brant or Saugeen, both of which Townships would rather stay as they were until they could become municipalities of themselves, than come under Kincardine although the latter Township had a population nearly equal to all the other Townships in the county put together. But when we take into consideration that the municipal law was new, and that those that took upon themselves to be the leaders and advisers of the people, were totally ignorant of it, there is no great wonder that there should be some difficulty in obtaining an assessment the first time. The next year, 1853, was the same. In 1854, Kincardine, Bruce and Kinloss were one municipality, Huron one, Saugeen and Arran one, Brant, Carrick and Elderslie one, and Greenock and Culross one.

In the year 1855 each Township had its own municipality, with the exception of the Township of Bruce, which by some neglect on the part of the officers was attached to Kincardine one year longer than was required by law.

At this time these eleven Townships might be considered fairly packed, as every lot was claimed by some one and many were claimed by more than one or two.

It has been said, and I believe with truth, that the county of Bruce was settled within the shortest time of any County in the Province of Upper Canada, and it may be said with equal truth, that no County was ever settled under such inauspicious circumstances.

In the first place, from the year 1848 to the year 1852 the highest price for Fall Wheat was $00,90, when in remote Districts Spring Wheat could not be sold at all; in 1853 the rush to the gold mines of California and Australia gave the prices a slight rise; in 1854 the failure of crops in the Southern States and the south of Europe, raised it still higher, and then came the Russian War, to cap the climax, in 1855 and 56,and although it kept up pretty well in 1857 and 58, it was more from scarcity than for foreign consumption. All this was absolute ruin to the settler in the new County, he had sold his little stock and property at the lowest figure, and had to buy at the very highest. The little capital that he expected to last him until he could grow his own provisions, did not last him until he got his shanty built, and a few acres chopped. This compelled those that could not conveniently go out to earn something to supply their wants, to accept the only alternative that was left them and that was to go into debt.

Now going in debt for a few necessaries, such as provisions and the necessary clothing of a family, is nothing very extraordinary, but the settlers in this County went into it in a manner that was really astonishing.

But it was not the sudden rise in prices that the Bruce settler had to contend with. His greatest enemy was the influx of money, caused by the expenditure on the various railways which were then making through the county, which induced those that were depending on their labor to go to work on them, rather than with the farmer. The wages asked were enormous, nor would they work for the farmer for the same rate that they received on the public works, and the result is that both parties have suffered since.

The farmer who had a little capital and no assistance of his own could hire none, and consequently his fallow remained uncleared, even if he had got one chopped.

The labourer on the other hand, after spending his six or eight months on the public works, returned home with about a quarter of what he reckoned on having. Between broken weather and paying for board, and perhaps sickness or absconding contractors, his dollar and a quarter a day that appeared so attractive at first, dwindled down to much less than the wages he might have had, had he contented himself with the farmer and taken a little trade. The few dollars that he brought home must go to pay the store bill, or taxes, or something else that must be payed. If he has a cow or two, or a yoke of oxen, which is not unusually the case, he is obliged to sell them at a sacrifice to procure something for his own sustenance. The debts he contract-

ed for other than those mentioned he is sued for, and then comes on the horrors of the division court.

The year 1856, '57 and '58 were very bad for clearing land, the snow lay deep and long in the spring, which was either very harsh and dry with a wet harvest, or a very wet spring and a very dry harvest. Oxen in spring are very weak owing to the want of root crops and turnips, the growing of which is shamefully neglected in this county.

But worse than all this is that curse of curses to the farmer and laborer, the Credit System, in connection with the means of collecting the debts.

The land mania that every one was afflicted with, drove many out of their senses as well as property. People imagined that if they could not get land for their children at the present time they never would have the same opportunity again. They borrowed money at any rate of interest, no matter what, if they could only get it. Others, if they could scrape up $20 to pay down on one hundred acres, would squat on the one along side, while they went in debt for every thing they required. But how, may be asked, did they obtain this credit? On account of their property. The land in general was good, and for every one that wanted to sell there were three ready to purchase. From $1000 to $1600 was the usual price asked for the good will of 100 acres, according to the improvements and locality. Every corner was considered village property, and if it was only staked off and a map made of it, it was considered worth $500 an acre. I suppose there have been as many as three hundred persons in the Township of Bruce in 1856 looking for land, which they would pay a fair price, but could obtain none under the above figure; to-day one half the Township would be sold for from $400 to $500 for the good will of it, and the land is the best on the face of the globe. Under the circumstance mentioned above, with regard to the supposed value of property, the settlers did not seem to care what debts they contracted. The merchants on the other hand were not slow to give them an opportunity. All a person had to do was to say he had so much land with as much paid on it, and his credit was good for $200. But the local merchant was not the worst, the foreign trader is the party that has ruined the County of Bruce. First, the stove pedler, the plough maker, fanning mills, fruit trees, and furniture; the number of agents for the sale of these articles as astonishing, an absolute pest, no soonor had you bought off one, than another was in the clearance or house as the case might be. The more you protested against buying the more pressing they became. All they required to know of the parties was, had they land? and then, as they said, the law was sure to find them their pay. It is true many bought articles that they did not want or intend to pay for, but for this the venders secured themselves by charging double the value of the article to every purchaser. Others again bought what they were not in the slightest need of; parties bought stoves that had not a herring to cook on them, and others got them that did not know which part of them to put the fire in a year before, and if they were not getting them on the credit system they would not have one in the course of their lives. In no county in Canada could such things have been more easily dispensed with, for better material for building chimney of either stone or clay is not in existence, than can be found in the County of Bruce. Every body knows how stone or burnt brick chimneys are built, but the clay chimneys in the country are highly dangerous, and should not be allowed in a settlement. Chimneys can be built with clay, solid or moulded into sun burnt brick, which article can be prepared in this manner: Mark out a piece of ground for a bed, say 12 feet by 6, remove the surface carefully till you get below the roots, and loose soil, which is generally from 8 to 12 inches. In some parts by that depth you will be in the marl (which is the best manure for sandy, mucky, or loamy land that can be applied) or in stiff clay, but it does not matter which, as either is equally good for the purpose; of this you will dig and break as fine as possible 1 foot deep, then soak it through with water, leave it to soak for 24 hours, then take a horse, or ox and lead, drive, or ride him through it until it is completely mixed and no raw particles appearing in it, when turn with the shovel. The only point where judgment is required is to know what temper is required for moulding or building; if for moulding it need not be very stiff, but if for building a solid chimney the stiffer the better. This is the part of the operation that has defeated thousands, and led to the practice of putting wood along with the clay, which has ended in the burning of many houses. When a bed of clay of a foot

thick is firm enough for a man to walk on without sinking more than four inches into it, it is fit for use. You then take some straw, or beaver hay, and chop it n about 4 inch lengths, on every shovel full of mortar you shake a handful of this litter, which is for the double purpose of drawing the water out of the mortar and preventing it from cracking. When you think you have got enough to build your wall 4 feet high, you commence by taking off the last shovel full (each shovel full removes its own share of litter) in your hands, roll it on the litter so as it will be evenly covered or mixed with it, strike it with force on a heavy plank, or slab, or large stone if you have one convenient, until you get it to the shape you want it. For the lower part of a chimney the walls should be 18 inches thick. For this your pieces should be of the same length as the thickness of your wall, and whatever width is most convenient, either 4 inches 6 or 9, and then either 4, 3 or 2 bricks will cross one, and make a complete band. By laying them on carefully and pressing them firmly together, you will make a wall that will last longer than any wooden house that ever was built. After the wall reaches the height of 4 or 5 feet a wall of 6 inches thick will do, when you mould your pieces to the size most convenient. From 4 to 8 days by a man who is well acquainted with the work, will build a chimney in any common house or shanty, and had such a practice been pursued in the County of Bruce, it would have saved thousands of dollars, as well as heart-aches.

Then there is another advantage the fire-place has over a stove, in the article of candle light. With a tolerable supply of dry light-wood $2 worth of tallow would do in the year for candle light, whereas unless they sit in total darkness less than 6 or 8 dollars dont do with a cooking stove.

Again there is the wood. It does not take so much in bulk, but it takes far more labor to chop wood for a stove, than for a fire-place, and if the house is not very close, which is seldom the case in the "bush," the stove is burned out in the fourth or fifth year, and in many cases before it is paid for.

The next article we come to is the plough, and although he would be considered a bold man that would deny the fact of a plough being a useful implement in agriculture, yet there are many who have got them here on "tick," who had as much use for them as a native of Madagascar has for a pair of skates. One acre of new cleared land is worth 3 acres of or called plowed land, for the simple reason, that the land is not plowed; to be sure the plow and team are in the field and are driven round through and among the stumps, but the work bears no more resemblance to plowing than a fresh chopped fallow does to a well laid floor. But he has a vague notion that it must be plowed, he has seen good second crops obtained by plowing, and he dont see why he should fare worse than his neighbour. Now although the land is uniformly good, yet there are many different kinds of soil from the solid pavement of boulders and small stones, with a slight mixture of vegetable mould, to the finest sand, with 18 inches of the same mould on the top of it, and from the stiff white clay in the black ash swale, to the loam that you could sift through a cheese cloth.

But our Bruce farmer classes all alike, all get the same usage, go through the same process. That is by those that do all on the credit system. We have some as good farmers as there are in any part of Canada, but what can they do among such a crowd that will do nothing but wait. They will wait till the swamps dry up and then they wont need draining. They wait till the roots and stumps rot before they attempt to level the cradle knolls formed by the roots of trees blown down. After cropping the land until it is worn out, they let it run wild until it recovers itself again. They petition to have their land reduced in price from $2 to $1 an acre, although they would not think from $10 to $16 a cent more than the value were they selling out. When their petition wo'nt be heard, they wait till the times get better or the government changes.

All this time the industrious settler is trying to do all he can, he removes all obstructions off his land in the shape of fallen timber, old rotten logs, opens surface drains, levels all knolls, and does every thing in his power to render his land capable of being sown early. In the year 1858, which may be termed the destitution year, men of this description had as good crops as ever they had. Two of these came under my own notice, one was a piece of spring wheat, on a piece of flat land with some vegetatable mould on top, which was well dragged in the first week of April. The yield was about 30 bushels to the acre. The other farm was a clay loam; the part of it that was tilled in the way I describe was a field in which there was a light

hollow. This the owner cut a drain through about 18 inches deep, levelled all the knolls, took out all the stumps he could, plowed it deep and planted potatoes in it in 1857, in 1858 it was fit to receive the seed two weeks before any plowed land he had, and when the land that had been plowed and not drained was hard and dry this was soft and mellow. He sowed a bushel of Glasgow wheat on the piece and got 35 bushels off it (there was not quite an acre in it). Of 4 bushels sown on land tilled in the usual way, he had not 40 and that of an inferior sample. The plow is a useful implement when the ground is fit for it, but the spade and grub-hoe have preceeded them in all countries that we have any history of, and in no country are these more necessary than in the County of Bruce. It is a lamentable fact that there is no tool made of iron or steel the native American hates with more intensity than the spade, and the immigrant very soon imitates him, either through false pride or carelessness. It is true the spade is very little used in the old country except for draining, and in the construction of railways, &c. But in this country it should go along with the axe. The first thing a man should do in clearing a piece of land, whether it is one acre, five acres or fifty, is to remove all obstructions to the water lying on it or that may lie on it, for such will be the case where there is marl or clay bottom, or subsoil. At least such is the case in the Townships bordering on lake Huron in the County of Bruce. Next to this should be the digging down the knolls. With a proper spade, a man can level an acre per day. In the underbrushing care should be taken to pile it on these raw spots, for two reasons; first, to enable the frost to enter and pulverize, which it would not do if the snow fell evenly and slowly on it; secondly, the burning of the loose clay and the ashes from the brush enriches those spots, so that the crop will be as good the first year as it will be in any other part of the field, which is not generally the case when they are dug cold and raw, in the spring after the land is cleared. Perhaps, this is the reason why it is not practised more. I know I did five acres one year in that manner and it far exceeded my expectations.

To the man that is determined to keep in the old track, or as near it as possible, I would advise him to try this far, and I will warrant him a satisfactory return, it is but a slight reform and might lead to great results.

But to him that would "reform it all together," I would say *come to the trenching at once.* It is a bold proposition certainly, and one I would not like to make in a large crowd of spade-haters, still I will maintain that had each householder in the County of Bruce one acre of trenched ground down with parsnips, carrots and mangel wurzel, from the second year of his being on his lot, such a heading as "Destitution in the County of Bruce" would never have been seen in the columns of a newspaper, to the disgrace of our magnificent County. But you will say it was the case all over the Province. I say I have not the least doubt of it, and from the very same causes too. The spring of 1858 was comparatively fine, that is, the month of April was dry and cold, but the fodder being all used, and no feed in the bush or pasture, the cattle were not able to work. When the feed did come it was raining every day. Those that did not get their crops in in April did not get them in in June, and the result was they might as well not have put in any, for no "twelve good men and true" that ever were sworn could tell whether fire-weed, fox-tail, timothy or wheat bore the greatest proportion to the whole bulk. Notwithstanding all this deficiency, if the "Fathers" of the municipalities had taken the precaution of ascertaining how much was in each Township, and how much would be required, the distress would not have been so severely felt, and the borrowing of that large sum from the government would have been avoided. This could have been done by the different collectors, for at the time they were going round each ratepayer knew how much he had and how much he should want. Such a measure I believe was proposed to some of them, but it was met with "pooh, pooh! that was always the way the people were grumbling, there would be plenty sold yet, they would engage."

They were right in one respect, there was plenty sold out of the back Townships and taken away east for 75 cents per bushel, but if there was, it had to be brought back again for $2,00 per bushel.

I forgot to state in the proper place that from the middle of June 1858 the heat was oppressive, the ground was absolutely baked, and that that was sown latest suffered most. Here the early sowing shewed its superiority for it had well covered the ground and caused it to retain the moisture. In like manner the timothy that was close to the

stumps, and was not disturbed by the plow.

The fox-tail glories in a dry year, and sprang up the moment the heat set in; but the fire-weed was king of all, it has a long straight root like flax or hemp, and will succeed in the hardest ground and driest season. One old north Briton had a clearance of this description in which he dragged in 6 bushels of oats and 5 bushels of wheat, and I believe the drag had some wooden feeth in it. The wheat barely headed out; the oats which were not sowed quite so soon only came to the third leaf. He would not believe there was anything wrong in the way it was put in. The time, the soil, the climate, and the government were the cause of the whole disappointment. Neither flax,turnips, nor root crops had any charms for him, he could not live on such things himself. Could he not feed pigs or sheep with them? Well, he might do that, but where were the pigs and sheep, and besides, he said, there was nobody in the settlement grew any of them, and no one in the old country ever tried it but the gentry, and of course he could not presume to do any thing of the kind.

This I am sorry to say is the feeling, if these are not the expressions of the majority of our settlers in this county.

Our best farmers are not the best educated men we have. They are men who by never ceasing toil accumulate some ready money, whereby they are able to take the advantage of those that are less cautious, and not quite so industrious. They are not obliged to sell their goods when everybody else is pressed by his creditors. By this means they obtain a position which they can easily hold among a people so very careless. The only educated men we have are Merchants, Millers, Mechanics, Lawyers, Commissioners, Clerks of Division Courts and Bailiffs. Some of these are doing very well, others very indifferently, especially those that gave too large credit or commenced business on borrowed capital. When any of these gentry try farming and of course succeed no better than they did at their store-keeping, the "unwashed" takes the liberty of saying that *learning* wont make a farmer without labor.

Generally speaking, the system of farming practised here is superficial. Bushels and acres is the order of the day. The man that has the largest clearance, or the largest summer fallow, and the greatest number of cattle, is considered the best farmer. It is true that while the land is fresh and a crop of turnips succeeded by a crop of wheat, and then seeded down, a man can do very well, for by the time he has enough cleared the stumps will be coming out of what he cleared first, and then he begins to summer fallow. This system does well where land is plenty, and a man has plenty of help within himself; but, say what you will of the summer fallowing system, there are two years lost for one crop, when by dividing the labor there could be a crop obtained every year. Of this mode of cultivation 20 bushels of fall wheat are obtained as an average, whereas by a course of root and green crops you may expect 40 bushels.

Trenching is the only mode of cultivation that surpasses all others yet adopted. In no country is it more necessary than in Canada, and in no county can it be more benificial than in the County of Bruce. The guiding principle in agriculture should be to make clay land as much like sand as possible, and the sandy land like clay. Every one knows that river flats which are made from alluvial deposit are the richest lands in existence. Now I cannot see why a deposit made by the hand of man, would not be as good as that made by the overflow of a river. It is well known that river flats dont need draining, neither would our heaviest clays if they were once trenched and the water never to rise above the trenched ground. The rain or snow that falls on land never hardens it if it can soak through it and pass off. It is when it soaks and bakes under the heat of the sun, and no loosening matter mixed n the subsoil, that it becomes hard. It is the numerous ingredients of which they are composed that make those flats so mellow and so dry.

You may take equal quantities of sand, marl, peat, or black muck, lime, clay, stable manure, mix up all together and you have as good an alluvial deposit as ever was made.

The novelty of spade husbandry is the only thing that makes me so diffident in introducing it. I say and say it without fear of contradicton, that the County of Bruce is the best agricultural County in Canada, and for the same reason it should receive the best cultivation. The old idea of holding large farms under surface tillage is too much the practice in this Connty still, and the sooner the people are convinced of the fallacy of it the better. There are hundreds in the County of Bruce that hold one and two hundred acres that will never till twenty of it in their

lives, for reason I shall endeavour to show hereafter. Now I shall endeavour to show what an ordinary man can do on the principle I advocate.

Suppose a man and his wife go into the bush the third week of September. The first week would be better, only that I am supposing them to be of the very poorest class and cannot afford to lose anything they can earn. The first month it takes him all his time to build a shanty, with a chimney such as I have described already, the next month should be spent underbrushing, chopping up old rotten logs and turning them out of their beds, so that the frost may extract the water out of them, that they may burn the more readily in spring, levelling knolls, and draining if necessary, and in clay land it is always so. Four or five acres is enough to undertake to do in this manner. Every stick that he can make into cordwood he should do so. We will suppose him to be ready to commence chopping by the first of January. There are three months to chop the five acres and prepare for sugar making. If there is no cedar or black ash on the lot he should be careful to select any red beech and rock elm, white ash, or cherry for building purposes and fencing, these should be chopped and drawn before the snow gets too deep. With regard to sugar making the process is so well known that it needs no description. However, in all I have seen, and a good deal I have made myself, there is more sap and labour wasted that would make double the quantity. A person in the circumstances described, if he has a good sugar-bush on his lot, should get a salts kettle, if in his power, if not, a fioe pail sugar kettle. This he should fix in an arch, made of clay, after the manner of the chimney building; it should be set in a manner that the flame would surround it to within four inches of the top. By the side of it he could set one or two smaller pots for heating the green sap, and so keep the large one boiling down. By this means a quarter of a cord of wood will be sufficient to boil for the season; smoke and cinders, and all other matter that never fails to get mixed up with it in the old way, have no access to it all, neither is there any loss from sap boiling over, or spilling in removing from the different kettles. To a new settler in the bush sugar is invaluable, for with 100 lbs. of sugar, and 200 lbs. of tomatoes, he can make a delicious preserve, that would last him the year round; perhaps there might be a little more sugar needed in that that would be kept for summer.

During the intervals of sugar making, the settler should dig in some convenient bank for a root house. One that would hold a 1000 or 1500 bushels of roots is nearly as easily built as a smaller one. Ten feet wide, sixteen feet long, and eight feet high, will hold 1280 bushels. This should be built with logs, the same as any other ground building. The logs should be laid close, and the roof should form a perfect arch, in the same way as the Cobb'd roofs are generally made. The roof should be covered with mortar, such as is recommended for chimney building. There should be a large, open drain around it, and the floor should not be within 10 inches of the bottom. The mortar should be protected by slabs or clapboards from the rain and frost. An opening should be left in the opposite end from the door to pass down the roots to a party inside, who should pack them by hand with some clay, sand, or black muck between the layers; in mild weather this should be left open, and carefully closed in frost. Only turnips, carrots, mangel wurzel, and potatoes need a cellar; parsnips are proof against frost, and need only be put in for convenience. As soon as the frost is out of the ground, the settler should lose no time in trenching an acre or half an acre of ground. The brush he must burn by hand; that is, kindle fires of chips, and pile the brush on them. The sound wood will have been removed for firewood, fence timber and building. All the rotten wood and leaves should be carefully buried in the bottom of the trenches, together with the roots and debris that will have to be chopped down during the process.

The trenching is done in this manner: You lay off your grounds in lands of 16½ feet each; eight of these ten rods long will be half an acre. You first take a strong grub-hoe, with which you loosen the surface as far as the roots go down; this you remove with the shovel to the side opposite the ground you are going to trench, then with a spade as strang as a crow bar, and as sharp as a chisel, you dig at least to the depth of 18 inches, this you shovel out, then you have a trench about 2 feet wide and 18 inches deep. Now you have room to dig underneath the roots, by which process they are far less formidable than they appear at first. The fine pulverized mould should be kept on the top

as much as possible. The hard clay knolls should be thrown in the hollows, and the decomposed matter that is in the hollows on the spot where the knoll stood. The ridges should be as level as possible, and an open furrow between each, at least four inches deeper than the ground is trenched.

By this means all the small stumps are removed at once; the larger will be so trimmed up that after a winter's frost a charge of blasting powder will put the sound ones, at least, in the way they will burn out. The hollow or rotten ones will burn out by themselves, with the assistance of the small ones being stuffed into them.

This to many may appear a tedious and laborious system, but when we take into consideration that when the land is cleared a man can work at it from December until April, and that any man can do an acre in a month; and that when it is once done it is done forever; and that one acre will produce as much as four not so worked, we will see the advantage of it. A good spadesman will do an acre in two weeks. I don't think it could be drained in much less time, and no one has ever questioned the benefit derived from draining yet. As soon as the prepared ground is pulverized by the spring frosts, it may be sown in equal parts with carrots, parsnips, and mangel wurzel. Drills should be made with the corner of a hoe about three inches deep, and from 24 to 30 inches apart, and from 8 to 12 inches between the plants. The only manure, and I believe the best, that can be applied to these, is what ashes will have been made during the time the settler has been on the place, mixed with three times its bulk of burnt clay, or fine mould, spread evenly in the drill, and the seed dropped on in it small pinches at the prescribed distance. The remainder should be sown with Flax, Oats, Potatoes and Turnips. They should be placed in rows as well as the rough state of the surface will admit. If the settler is able to purchase a cow, a brood sow, and a couple of sheep now, he should do so; if not, he must turn out for the haying and harvest to earn them. Besides the sow he will want three or four store pigs, to feed on the roots that he will not want for himself and family, or the cow and sheep. The produce of the acre of flax he will have to sell, which will bring him from £20 to £40, according to all the trials that have been made of it, either in this country or the old. By having a steam box over his sugar kettle any weeds and all the small roots that are pulled out of the spots where they are too thick, can be converted into food for the pigs, and the box can be made large enough to hold as much as will do for a week. The produce of root crops on clay land is not so great the first year as afterwards, while in the sandy it is fully as good, if not better, than it will be in the succeeding ones, especially if not manured. A thousand bushels is about the average yield of such root crops, wherever they have been tried in this county, consequently off of half an acre there would be 500 bshls. with which he could feed 1200 lbs. of pork, which at $5 a hundred would be $60. This, with $120 for the flax, would make $180; beside butter from the cow and what poultry they could rear. The capital required to go on a lot in this way would be $140; so the settler would have $40 saved the first year. Flour, of course, he would have to buy, but he can do that much easier than grow it. Growing wheat in small quantities is the worst thing a man can do, except trying it on a large scale, which is ruinous. I have known people living in the bush for three years before they could grow an ounce more than they wanted for their own use,—all on account of sowing their wheat first. The ground would be logged in the spring, done in a hurry, the ground neither leveled, nor the ashes spread. The consequence would be that some of it would be too rank, some of it too poor, and all would be rusty; while their potatos and turnips would have been good, only that were all in too late. Another advantage they the spade husbandry has over the drag, is that you don't need oxen; one horse is sufficient after the second or third year. If I have not said enough on this subject I have said too much, for my labor is all lost. I believe it was on the subject of the farmers of Bruce buying ploughs they did not want that I began, and I have ended by trying to prove that the spade would have suited them better. How far I have succeeded time will tell.

(*To be continued.*)

Miscellaneous.

Cure for Drunkenness.—There is a prescription in use in England for the cure of drunkenness, by which thousands are said to have been assisted in recovering themselves. The recipe came into notoriety through the efforts of John Vine Hall, father of Rev. Newman Hall, and

Captain Vine Hall, commander of the *Great Eastern* steamship. He had fallen into such habitual drunkenness that his most earnest efforts to reclaim himself proved unavailing. At length he sought the advice of an eminent physician, who gave him a prescription which he followed faithfully for seven months, and at the end of that time had lost all desire for liquors, although he had been for many years led captive by a most debasing appetite. The recipe, which he afterward published, and by which many other drunkards have been assisted to reform, is as follows: "Sulphate of iron, five grains: magnesia, ten grains; peppermint water, eleven drachms; spirit of nutmeg, one drachm; twice a day." This preparation acts as a tonic and stimulant, and so partially supplies the place of the accustomed liquor, and prevents that absolute physical and moral prostration that follows a sudden breaking off from the use of stimulating drinks.

Drab Sandstone.—The beautiful drab sandstone which is now coming into extensive use in New York, comes from Dorchester, Nova Scotia, in blocks weighing about five tons. It differs from most other sandstone, in not being stratified. It is very homogeneous and close in the grain. It is sawed into slabs, in the same manner as marble, after it arrives in this city.—*Scientific American.*

The Horse in Arabia.—The horse is involved in the most ancient superstitions of the people of Arabia. They believe him to be endowed with a nature superior, not in degree only, but in kind, to that of other animals, and to have been framed by the Almighty with a special regard to the convenience of man, and the setting forth of his person. It is one of their old proverbs, that, after man, the most eminent creature is the horse; the best employment is that of rearing it; the most delightful posture is that of sitting on its back: and the most meritorious of domestic actions is that of feeding it. Mahomet himself did not disdain to inculcate a lesson of kindness towards the horse. "As many grains of barley," said he, "as are contained in the food we give to a horse, so many indulgences do we daily gain by giving it." The belief is widely spread that the best breeds are descended from five favourite mares of the prophet, on which he and his friends fled from Mecca to Medina.—*Cassells Popular Natural History.*

Washington's Love of Horses.—The President's stables in Philadelphia were under the direction of German John, and the grooming of the white chargers will rather surprise the moderns. The night before the horses were expected to be ridden they were covered entirely over with a paste, of which whiting was the principal component part; then the animals were swathed in body cloths, and left to sleep upon clean straw. In the morning the composition had become hard, was well rubbed in, and curried and brushed, which process gave to the coats a beautiful, glossy and satin-like appearance. The hoofs were then blackened and polished, the mouths washed, teeth picked and cleaned, and the leopard-skin housings being properly adjusted, the white chargers were led out for service. Such was the grooming of the ancient times.—*Recollections of Washington.*

Resistance to Improvements.—The following from Archbishop Whately's Annotations on Bacon's Essays, is a rich literary and scientific gem:

It was the physicians of the highest standing that most opposed Harvey. It was the most experienced navigators that opposed Columbus' views. It was those most conversant with the management of the post-office that were the last to approve of the plan of the uniform penny postage. For the greater any one's experience and skill in his own department, and the more entitled to the deference which is proverbially due to each man in his own province, the more likely, indeed, he will be to be a judge of improvements in details, or even to introduce them himself; but the more unlikely to give a fair hearing to any proposed *radical* change. An experienced stage-coachman is likely to be a good judge of all that relates to turnpike roads and coach horses; but you should not consult him about railroads and steam carriages. Again, every one knows how slowly and with what difficulty farmers are prevailed on to adopt any new system of husbandry, even when the faults of an old-established usage, and the advantages of a change, can be made evident to the senses.

Sleep.—There is no fact more clearly established in the physiology of man than this, that the brain expends its energies and itself during the hours of wakefulness, and that these are recuperated during sleep; if the recuperation does not equal the expenditure, the brain withers—this is insanity. Thus it is that in early English history, persons who were condemned to death by being prevented from sleeping always died raving maniacs; thus it is, also, that those who starve to death become insane; the brain is not nourished, and they cannot sleep. The practical inferences are these: First, those who think most, who do the most brain-work, require most sleep. Second, that time saved from necessary sleep is infallibly destructive to mind, body, and estate. Third, give yourself, your children, your servants—give all that are under you the fullest amount of sleep they will take, by compelling them to go to bed at some regular early hour, and to rise in the morning the hour they wake; and within a fortnight, nature, with almost the regularity of the rising sun, will unloose the bonds of sleep the moment enough repose has

been secured for the wants of the system. This is the only safe and sufficient rule; and as to the question how much anyone requires, each must be a rule to himself—Great Nature will never fail to write it out to the observer under the regulations just given.—*Dr. Spicer.*

Difficulty of Distinguishing a Plant from an Animal.—The more naturalists know of the plants and animals of the globe, the more difficult have they found it to distinguish one from the other. Among the little organisms which are invisible to the naked eye, there are large numbers about the character of which there has long been a fierce dispute, they being claimed by the botanists as plants and by the zoologists as animals. Many of the plants in certain stages of their growth, swim about in the water and look and act so nearly like animals that they would probably have always been classed as such had they not been observed to branch out and grow up into perfect plants. There is no single character by which the animal or vegetable nature of an organism can be tested; but the safest guide in the doubtful cases is furnished by the mode in which the nourishment is taken. Animals are nourished by organic matter, which they take in some way into the interior of their bodies; while vegetables have the power of absorbing their food from inorganic elements in the exterior.

The Potato Disease.—A correspondent of the *Mark Lane Express* residing in the Carse of Gowrie, observes:—'The more we look into the potato disease, the more we are inclined to advise drying and greening of the seed in autumn by laying the tubers in a dry place exposed to sun and wind for several weeks, one tuber thick, and turning them at least once, taking care to cover them in the evening should it threaten frost. After a few days exposure, it takes a considerable degree of frost to injure them. When sufficiently greened, they ought to be covered up as usual with earth and straw, but the bin-ridges not above two feet wide and a foot in height, so that there may be no disposition to heat in the mass. This exposure and greening greatly increases the vital stamina, preserving the seed from the dry rot and the future plant from the blight. The stem and leaves of the future plant are hence of a firmer texture, and healthy. Here the potato blight and the rot in sheep are completely similar, excess of moisture in the food, atmosphere, &c., disposing both to disease; the induced disease in both also takes a vital character is organic or animalcular, and both, we believe, are promoted by develope electricity.—June 21.

Influence of Extreme Cold upon Seeds.—Some experiments have been made this year, by Professor Elie Wartmann, of Geneva, Switzerland, on the influence of extreme cold upon the seeds of plants. Nine varieties of seed, some of them tropical, were selected. They were placed in hermetically sealed tubes, and submitted to a cold as severe as science can produce. Some remained 15 days in a mixture of snow and salt; some were plunged into a bath of liquid sulphuric acid, made extremely cold by artificial means. On the 5th of April they were all sown in pots, and placed in the open air. They all germinated, and those which had undergone the rigors of frigidity produced plants as robust as those which had not been submitted to this test. —*N. Y. Tribune.*

PROVINCIAL EXHIBITION.

To be held at London, September 24th, 25, 26, & 27, 1861.

ENTRIES OF ARTICLES FOR EXHIBITION except in the classes of Horticulturral products, Ladies work, Foreign Stock and Produce, must be made at or transmitted to the office of the Board of Agriculture, Toronto, on or before Saturday, August 31st.

Entries in these special classes may be made till the evening of Friday, Sept. 20, at Toronto, and on Monday Sept. 23, at London, but exhibiters are requested to make their entries in these classes also at as early a date as possible.

Prize lists and Blank forms of entry may be obtained of the Secretaries of Agricultural Societies and Mechanics' Institutes in any part of the Province.

HUGH C. THOMSON,
Secretary Board of Agriculture.

Board of Agriculture office,
Toronto, Aug. 14th, 1861.

WILSON'S ALBANY STRAWBERRY.

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Old varieties $5 per thousand.

Grape Vines.

Concord, Diana, Rebecca, and Canadian Chief, $1 each. Address

CHARLES ARNOLD,
Nurseryman,
Paris, C. W.

Paris, Aug. 15th, 1861. 16–4t.

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30 RAMS, one year old and upwards, Cotswold, Leicester and Lincolnshire breeds, large size and good quality, weighing from 240 to 350 lbs. each, four imported. Terms reasonable. Will be exhibited at Brampton, County of Peel, fall fair, on Wednesday, Sep. 18th.

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August, 1861.

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MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

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Toronto, Aug., 1861.

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Paris, C. W. June, 1861 3t.

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THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the GovernmentHouse. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Toronto, 1861. *Secretary.*

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A PURE bred young short horn Bull; Sire and Dam imported in 1857, and *both* took First Prizes at the Provincial Show in Brantford the same year.

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Brantford, April 8th, 1861. 4-t

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THE

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OR

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OF UPPER CANADA.

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Effect of Guano in the Soil at Various Depths.

Some very interesting experiments, having important practical applications, have recently been made in Belgium, with this valuable fertilizer; and which go to show that guano is more beneficial when put into the soil to the depth of three or four inches, than when merely mixed with the surface as is commonly the practice. We remember seeing last year on a farm in the western section of Upper Canada, a large field of turnips manured with Guano; in one portion the manure had been deeply incorporated with the soil; in the other it had been merely scratched in with a light harrow on the surface. In all other respects the management was the same, but the turnips were decidedly better in that part of the field where the manure had been more thoroughly and deeply intermixed with the soil. It is now well known that it is dangerous to mix guano and the seed together, as the vitality of the latter becomes endangered by actual contact.

In Germany it is usual to deposit guano, on all soils, two to three inches deep; and it is noticed by this practice that the efficacy of the manure is always real and important. On the contrary when spread on the surface it is found to exercise comparatively little benefit. The great Agricultural Society of Prague has instituted some carefully conducted expirements, from which it is inferred that guano should be worked in three or four inches deep. This method is best when the manure decomposes in the soil without the assistance of the atmosphere, but not with stable manure, bone-dust, &c. The more easily decomposed manure, such as the nitrates of potash and soda, must not be buried too deep, or they will be rapidly carried into the subsoil by rains, or into under-drains where they are formed, and thus a large portion of the manuring power will be lost.

We subjoin the results of some experiments made by M. Flockhardt, at Tharand, during the years 1857 and 1858, as reported in a recent number of the *Journal de la Societe Centrale d' Agriculture Belgique*:—

1857 Depth.	Produce per Hectare, 290 Kilogrammes of Guano per Hectare		
	Winter wheat.	Winter Rye.	Buts.
	Kilogr.	Kilogr.	Kilogr.
1. Putting in with seed	2590	2203	7402
2. From one to two inches	2644	2203	7102
3. From two to three inches	4142	2077	7842
4. From three to five inches	4670	2590	8108

1858. Depth.	Effect the second year without new manure.			With new manure
	Buts	Winter Rye	Winter Barley	Winter Barley
1. By one turn of harrow with seed	3966	3349	1058	2027
2. From 1 to 2 inches	3613	3525	1704	2654
3. From 2 to 3 inches	4886	3877	2115	2655
4. From 3 to 4 inches	5025	4230	2908	3264

"The effects mentioned in these are very feeble on account of the state of the atmosphere during

the time when these experiments were made, and we must remark that the burying deep of the guano modified in part these disadvantageous circumstances. Indeed, if we admit that roots are more quickly developed in soil where they find more assimilating elements, we can suppose in deepening the manure we will develop the roots of the plant at a certain depth below the surface of the soil, and these plants will resist the cold of winter and the dryness of the summer. When, on the contary, the manure is spread only on the surface, it is clear, a number of superficial roots are produced,—roots which extend no further than the surface soil,—and these roots are more sensible of the extremes of temperature."

Sale of Thorough-Bred Stock.

Mr. Simon Beattie, of Markham, had a successful sale of his third importation of pure-bred Cattle and Sheep last spring, at the residence of Mr. G. Scott, Scarboro', on the 1st of August. Notwithstanding the busy season for farmers, the attendance was good; and although the number of animals was not large, the quality was excellent. The following is a list of the purchasers and the prices obtained, which we trust will be found remunerative to Mr. Beattie, and encourage him to persevere in an undertaking which will prove profitable to himself as it is productive of much benefit to the country. We are glad to see among the purchasers the names of several of our best and most enterprising farmers; and that the animals will be kept in the Province for breeding purposes:—

1. Durham Bull, "Baron Solway," calved 9th October, 1860, by "General Havelock," dam "Snowdrop." Purchaser, John Snell, Esq., of Brampton..... $250
2. Durham Heifer, calved Nov. 15, 1858, by "Tweedside," dam "Jane," in calf to "Gen. Havelock." Purchaser, Henry Jennings, Esq., Markham..... 350
3. Galloway Heifer, "Blooming Heather," calved March, 1859, by "Mosstrooper," dam "Mary," by Fergus. Purchaser, John Snell..... 320
4. Ayrshire Cow. Purchaser, W. Ingles, Esq., Markham..... 165
5. One shear Leicester Ram. Purchased by John Snell..... 118
6. Do. do. do. John Miller, Esq.... 115
7. Do. do. do. Robt. Armstrong, Esq 100
8. Do. do. do. H. Jennings..... 100
9. Do. do. do. John Snell..... 120
10. Do. do. do. F. Medcalf, Esq., Yonge street..... 95
11. Three shear Cotswold Ram. Purchaser, Wm. Armstrong, Esq..... 120
12. 2 one shear Cotswold Gimmers. Purchaser, W. Nimmo, Napanee..... 98
13. Do. do. do. Purchaser, Geo. Miller, Esq., Markham..... 80
14. 2 one shear Leicester Gimmers. Purchaser, John Snell..... 229
15. Do. do. do. W. Armstrong..... 100
16. Do. do. do. Geo. Miller..... 62
17. Do. do. do. F. Metcalf, Esq..... 30

Total.....$2,452

The Provincial Exhibition.

[The following article recently appeared as an editorial in the *Globe*, and as it is written in a truly patriotic spirit, and comprises much reliable information and several useful suggestions, we have sincere pleasure in transferring it to our columns without abridgment.—Ed.]

The sixteenth annual Provincial Exhibition of Upper Canada will be held this year in London, on the 24th, 25th, 26th and 27th of the next month. Only five more weeks remain for the completion of all the preliminary arrangements, and if the show is to be a success they will be busy weeks for the officers of the Provincial Association, the London Local Committee, and intending exhibitors throughout the Province. If any of our readers, who have stock, or grain, or implements, or anything else worth exhibiting, have not yet made up their minds whether or not they will become competitors, they should lose no time now in coming to a decision, if they would not, for a want of preparation, enter the lists on a disadvantageous footing. It is now fifteen years since the first Upper Canada Provincial Exhibition was held—little over the third of the average lifetime of a generation, accord in to the rate of longevity which prevails in this Province. Several of the officers of the Association during the first year of its existence are its officers still, and probably not a few of the exhibitors at the Provincial Show held in Toronto in 1846, will again be exhibitors at the London Show next month. But in other respects how vast the contrast between our circumstances then and now. In these fifteen years we have made astonishing progress. In 1846 the population of Upper Canada did not much exceed half a million souls. In 1861, it amounts to nearly a million and a half. Fifteen years ago such a thing as skilled agriculture was very rare in Canada. Now we have very many agriculturists, who, in their attention to the improvement of stock and to the proper rotation or crops, their judicious use of the best agricultural implements,

and the success with which their labours are crowned, will compare favourably with farmers in any part of the world. In 1846 our products were but little known abroad. In 1861 Canadian wheat commands the highest price that is given in the markets of England and France. Fifteen years ago our means of internal communication were of the most wretched description —roads were so bad that an Exhibition truly Provincial was almost an impossibility; it was hopeless to expect that products would be sent to the Show except from the immediately surrounding district, and perhaps a narrow strip of front townships along the lake shore. Now our means of communication are such that an enterprising farmer in almost any part of the Province need not be deterred from becoming a competitor, no matter in what locality the Exhibition may be held, whether in London, Hamilton, Toronto, or Kingston. We believe it is the Provincial Association and its annual Shows which we have to thank in a large measure for several of the changes to which we have alluded, and for others which might have been mentioned. And this much at least is certain, that each successive annual Show furnishes an excellent criterion of the progress we are making in agriculture and the industrial arts generally. At the first Exhibition, the value of the premiums awarded was about $4,200. At the coming Exhibition, premiums will be offerd amounting to $12,000; and the increase of competition, we doubt not, will be found to have kept pace with the increase in the amount of the prize lizt. Ii is now seven years since the Provincial show was last held in London, and the growing importance which attaches to this great annual gathering of all classes and all interests in Canada may be esti mated by the fact that while prizes to the amount of $12,000 are offered this year, in 1854, when the Show was last held in London, the amount of the prize list was but $7,000—and this, although 1854 formed part of the period of inflation, were there was a greater disposition to lavish expenditure of money than exists at the present time. The increase is very considerable, but the increased importance of the interests fostered by these annual Exhibitions; and the increased instruction and profit which they afford to the entire community, fully warrant the larger expenditure.

In speaking of the improvements which have taken place during the last fifteen years, there is one more especially connected with the operations of the Pprovincial Association which we must not omit to notice. In the early years of its history, the Association was destitute of anything in the shape of a local habitation, and its Exhibitions laboured under a disadvantage of being frequently held in grounds but indifferently adapted to the purpose, and without the accommodation of suitable buildings. This disadvantage no longer exists. There are no fewer than four localities, situated at convenient points elatively to the rest of the Province, which have permanent structures, surrounded by suitable grounds, with every appurtenance necessary to secure that what is exhibited shall be seen to the best advantage, and without loss or damage to the exhibitors. Kingston, Toronto, Hamilton, and London, can each boast of a Crystal Palace and Exhibition grounds, which leave very little to be desiderated either by exhibitors or visitors. London is the most recent contributor of this valuable boon to the agricultural and industrial interests of the Provinces, and perhaps bye and bye the city of Ottawa and some of the larger towns may take the same means of securing an occasioaal visit of the great Annual Show. The cost of the bullding and grounds provided by the city of London, will be when the whole work is completed, about $14,-000. Of this amount about $11,000 have already been paid by London and the county of Middlesex, and with some little assistance from Oxford and Kent. This is a result exceedingly creditable, when it is bourne in mind that the object is provincial, quite as much as local. The Board of Agriculture have recommended theLocal Committee to memorialize the Executive for a grant of $3,000 to provide for the deficiency, the Board at the same time expressing a willingness to give a guarantee that the money shall be refunded before the holding of the next Fair, in London, in 1865, or whatever else decided upon. Some of the members of the Board, we are informed, would have preferred that the whole deficiency should at once make good from the funds of the Provincial Association, and the degree in which local liberty has been manifested would perhaps have warranted this step.

While we congratulate ourselves on the progress which Canada has made, and the great improvement which has taken place in the position of our agricultural and other industrial interests during the fifteen years which measure the history of the Provincial Association, it is hardly necessary to say that we must not rest satisfied with our attainments, but must put forth increased efforts for the full development of the resources of our noble country. Much especially may be done for the improvement of agriculture. Our farmers generally have to learn to place less exclusive reliance than many of them now practically do on the fertility of the soil, which, without a correct system of culture, will soon become exhausted. They must pay more heed to the rotation of crops, if they would not have their land run out and become barren, and if they would avoide the damage caused by the insect pest, whose visits, it is now the opinion of scientiffc men, are invited by slovenly culture. They must pay more attention also in the selection of seed,to obtaining those varieties of cereals and roots which experience has shewn to be best adapted to our soil and climate. There is a wide field for improvement in the construction of agricultural implements and the more general adoption of machinery to supersede hand labour, whever it can be done with advantage. The

improvement of stock is another matter which deserves even more general attention than is now bestowed upon it by many of our enterprising agriculturists. Our annual Exhibitions are important auxiliaries in the securing of increased excellence in all these departments. They shew the farmer at once his deficiencies and his merits, by letting him see wherein he outstrips or falls short of his neighbours, and they excite an honourable emulation in all parts of the Province. They present an arena where men of all creeds and all political opinions can meet without angry passions or clashing interests, to contend in friendly rivalry for the awards which all are willing should be adjudged to the worthiest. They have done much good in past years, and we hope the coming London Exhibition will have a success not inferior to that which has attended the most successful of its predecessors.

Trial of Reaping and Mowing Machines.

Editor Agriculturist. Sir:—As the Trial of Mowing and Reaping Machines is always of interest to practical farmers, I beg to hand you the Secretary's report of a recent trial held under the management of the North Riding of Lanark Agricultural Society, which I trust you will find room for in your valuable paper

Yours, &c., L. H.

Ramsay, July 15th, 1861.

According to notice the Trial of Mowing Machines under the patronage of the North Riding of Lanark County Agricultural Society came off to-day, on the farm of Mr. Robert Lang, lot No. 14, 10th Con. of Ramsay. The decision is as follows: That No. 2, the Buckeye Machine, manufactured at Smith's Falls, by Messrs. G. M. Copitt & Bro., is entitled to the first prize. No. 4, Messrs. Froit & Wood's machine, although third in point of quality of work, yet in consideration of weight, portability, and general adaptability, being superior to No. 3, is entitled to the second prize. No. 3, Messrs. Patterson's Combined Machine, is entitled to the third prize.

Judges:—And. Dickson, Robt. McFarlane, Robt. Bell, R W. Sutherland, W. W. Wilkie.

David Campbell, Sec. & Treas.

August 1st, 1861.

The trial of Reaping Machines came off this day on the farm of Mr. Peter Young, lot No. 25, 7th Con. of Ramsay, awarded as follows. The Judges decided that No. 1, the Buckeye manufactured by Messrs. G. M. Copitt & Bro., is entitled to the first prize No. 2, Messrs. Patterson's is entitled to the second prize. And No. 3, a Self Raking Machine, is entitled to the third prize. They beg to state that in some points, particularly in the saving of the labor of a Rake, No. 3 is entitled to consideration.

Judges:—Robt. Bell, Robt McFarlane, W. R. Sutherland, W. W. Wilkie.

David Campbell, Sec. & Treas. N. R. L. A. S.

Cockle in Wheat.

Editor Agriculturist.—Yesterday while at work in my fall wheat field, I was curious enough to pull and examine a Root of Cockle, which I found to have five stems, dividing into thirty three branches, having as many heads or seed pods, containing fifty-one seeds each, in all sixteen hundred and eighty-three seeds.

This little experiment will prove to the farmers how necessary it is to prevent the growth of noxious weeds, which in most cases produce seed in greater abundance than valuable grain.

To those who are not acquainted with this plant, I may say that it is produced from a small black seed, very like an onion seed, and some in the fall wheat and is an annual. The plant grows about 3 feet high, and bears a purple flower, the stalks are very stiff and rather straggling. The best time to eradicate it is about the first of July, when it is easily known by its pretty bright flower. The principal objection to it, is the great injury to the flour when the wheat is ground. R. L. D.

Dovercourt, July 7th, 1861.

Smut in Wheat.

To the Editor of the Agriculturist. Sir,—Permit me to enquire of you, whether smutty wheat sown will have a tendency to produce smut; and if so, whether there is any means to prevent it. Some say that washing the seed with salt and water, and then drying it with lime, will prevent the smut in the future crop. Others, again, say that steeping it in a solution of water and blue stone, is a preventative.

Whether any of these operations would be a benefit, or if there are any others, you will confer a great favor by informing me to such effect.

It is from the difficulty of procuring seed this year which is free from smut, that I write to you concerning this matter.

Perhaps some of your readers could suggest something which would be a benefit.

By complying with the above request you will much oblige. Yours, &c.,

Agricola.

Brampton, Aug. 25th, 1861.

Remarks.—The disease called smut is likely to reproduce itself, by sowing affected seed. We would say to our correspondent by all means procure seed that is altogether untainted by smut, or any other malady, if possible; for too much attention cannot be given in selecting plump and healthy grain for the purpose of seeding. Smut is produced by minute fungous plants, and consist principally of two varieties. The first is termed *Uredo Segetum*, and resembles a black dust, growing within the glumes of wheat. It destroys the seed and its envelopes, converting them into black powder. The other fungus is designated *Uredo caries*, the dust having a brownish appear

ance, of larger grains, emitting a fetid smell, and is the more destructive of the two. We should strongly advise not to sow smutty wheat, if it can possibly be avoided.

Wheat affected in this way should be put through the fanning mill several times, and afterwards thoroughly washed in a cistern or tub, with clean water; the light and smutty grains will rise to the top, and can be skimmed off. Soaking the seed in a strong brine, sufficient to float a hen's egg, and afterwards drying it with lime mixed with hot water, pouring the mass over the heap, and thoroughly incorporating it with the grain, is an old practice, much to be commended. Sulphate of copper (blue vitriol,) forms a much approved solution for the steeping seed grain; using about 2 oz. or more, to a bushel. In this case it is best not to dry the the grain with quick lime, as it impairs to some extent, the powers of the mixture, by decomposing the sulphate of copper.

How to Destroy Thistles.

EDITORS OF THE AGRICULTURIST. GENTLEMEN. —I am induced to trouble you, for the purpose of asking the best mode of extirpating Thistles. I mean those that are commonly called Canadian (a graceful, slender plant) in contradistinction to the Scotch. My reason more particularly for wanting to be informed, is, that a person has been soliciting, and with some success, for customers, at a premium of $10 to be paid at the end of two years—the term allotted for their extinction, and a forfeiture of $1000 if his secret, or information, is divulged, by those who subscribe to his terms. All this appears to me to be a mixture of stupidity and imposture. If it is not so, I shall be glad to be set right. The little disclosure that has been made, is connected with the moon's age, and other lunar mysteries; and strange to say, with many it has not been without its attractions. Any opinion that I entertain on the subject, is not worth a thought; labor and good tillage is all that I should employ. But something is demanded as far as the high roads are concerned; supposing, as I do—that they are propagated by seed. I will take up no more of your valuable time, feeling assured if you can correct a tendency to delusion, that you will do it, by giving all the information on the subject that can be known.

I am Gentlemen,
Your Obedient Servant,
JOHN LESLIE.

Guelph, Aug. 18th, 1851.

P. S. A portion of the Eramosa Road is covered on both sides with thistles, and I suppose it is the same every where. J. L.

Our correspondent will find the opinions and experience of several farmers relative to the extirpation of thistles recorded in the back numbers of the *Agriculturist*. We agree with him that "labor and good tillage" involve the grand remedy, and the lunar theory should be left to those who choose to adhere to the superstitious practices of past ages, rather than abide by the dictates of careful observation and common sense When once the Canada thistle has got undisputed possessfon of the soil, it requires both time and perseverance to effect a dislodgement. Plants may be weakened, and, indeed, ultimately killed by repeatedly stripping them of their leaves. In pasture land thistles may be got rid of by cutting them off with a sharp instrument, technically called a thistle-spud, a little below the surface of the ground, whenever they make their appearance. In this way we have seen pastures entirely cleared in a few years. For arable land a thorough summer fallow; that is deep ploughing and frequent scarifying, bringing the roots to the surface, will give the thistles an effective check; and by subsequently pulling up what may appear a cure will be gradually effected. We know of no specific. Clean culture, and not allowing thistles to seed in waste places and on road sides, against which, we believe there is a statute, involve the general principles of prevention, which every farmer has, more or less, the means and opportunity of applying.

Important Invention—New Flax Scutching Machine.

We were yesterday, in common with several gentlemen connected with the flax trade, afforded an opportunity of witnessing the practical operation of a new flax scutching machine, invented and just patented by the Messrs. Rowan, of the York-street Foundry. Already it has been pronounced, by competent judges, the most successful mechanical appliance yet designed for scutching purposes; its great recommendation after its utility is the cost, which is moderate in comparison with that of other machines—so moderate, indeed, as to bring it within the means of the ordinary flax-growing farmers. A single machine requiring the attendance of one person will not cost more than £20; while a double machine, to be worked by two persons, may, we believe, be made for about £25. It is an advantage, too, that the machine does not require the attendance of skilled workmen; it can be worked by any ordinary farm labourer the space occupied is little, as the extreme dimensions do not exceed 5 feet by 3—not a fourth of the size of ordinary threshing machines. No extra amount

of power is required to drive it, and it can be connected by a pully to any threshing machine at present erected. It will, certainly, be a boon to the farmer to be enabled to scutch his own flax on his own premises. The new machine will produce 20 lbs. of scutched flax per hour, and the yield of clean fibre will be materially increased. The straw employed in the experimental test made yesterday was brought from Armah. In the ordinary scutching mills straw of the same growth and quality had yielded but 16 lbs. of fibre to the hundred weight; in the new machine the yield was 22 lbs. to the cwt. Another advantage is the speed of working. We yesterday saw five "stricks," or handsful of straw, thoroughly scutched in seventy seconds, to the entire satisfaction of competent judges who were present; the fibre was well cleaned from the wood, and the ends of the flax—so great a difficulty in the old mode—were particularly well done. Many persons visited the foundary in the course of the day to see the machine in operation—amongst others, the head of the firm of Richardson, Brothers, & Co., with his buyer; and so well pleased was he with the simplicity and effectiveness of the machine, that he gave an order for one to be forwarded to Russia. As we have alreay said, the Messrs. Rowan have patented the invention, and it will be at work for the inspection of farmers and others interested during the remainder of the week. It is of the utmost importance that parties who contemplate the erection of scutch mills should see the new machine at work, in order to judge for themselves of its efficiency, in comparison with others. This machine has capacity for scutching unsteeped flax as well as steeped; and is, therefore is likely to be ureful in those parts of the Continent and America where flax is grown for seed and not for straw, and where the straw is, consequently lost for fibre-production.—*Belfast Whig*.

High Farming in the West of Ireland.

Few would believe that, at the present moment, some of the best cultivated farms in this country are in Connaught. I visited the great farms of Allan Pollok, Esq., of Galway, said to contain thirty thousand statute acres, in last autumn. One of the proprietors is in county Galway, near Ballinasloe. Here all the defects of bad farming are invisible; no useless ditches, weeds, nor any want of thorough drainage; there is a proper rotation of crops, plenty of farm-yard and artificial manure applied, the best seeds used, and everything managed on the best system. The principal crops are green ones, wheat and some oats. Cattle and sheep are prepared for the Dublin and English markets. The fields are the largest that I have ever seen in England or Ireland. The population, though formerly dense, is now thin, so that Mr. Pollock's poor rates will not be very high. There is a good flour mill on the Lannelly property, where the wheat grown on the farms is made into flour. The laborers are fairly paid and seem comfortable. The farm-houses, and farm-yards are in the Scotch style, and seem very fine, but not so pleasant to the eye as the same would be in England. At Lannelly, I observed the finest field of cabbage, the best mangel wurzel, the best turnips, and the most splendid field of wheat I ever saw in Ireland, except at the Model Farm, Dublin, in 1851. I did not notice any flax. The sheep seemed good, and the same may be said of the cattle; but in neither of these departments did other large graziers and cattle breeders seem to be left behind. I have seen both sheep and cattle in England which have pleased my eye rather better. All the arts of the mechanic, the architect, the chemist, and the political economist, seem to have been called into Mr. Pollok's aid. The steam engine does everything possible for it to do. These farms have been visited by hundreds from almost every country of Europe. I omitted to state that there are some other Scotch gentlemen carrying on farming there, and a Belfast gentleman has also a very fine concern near Launcetown. The agricultural tourist who visits Mr. Pollok's farms at Lannelly and Craig, which latter is near Roscommon, will not be disappointed.—*Cor. of Belfast Whig*.

Yield of Root Crops to the Acre.

A correspondent of the *Country Gentleman* analyses a statement made a few weeks ago, that root crops were over estimated, and seldom or never produced anything like the amount claimed for them, the usual yield being more often at the rate of 200 or 300 bushels than from 800 to 1,200 bushels. It will be seen that by a reasonable estimate a good case is made out, which we regret to say, however, is seldom made out in a field, well as it looks on paper:]

And first in regard to parsnips, which only gave 576 bushels per acre. If the rows were 15 inches apart, as stated, and the plants 4 inches apart in the row, then they could only have averaged one-third of a pound each, which can hardly be considered very large for carrots or parsnips. I have never considered these roots very large unless they weighed two or three pounds each, while I have seen carrots that weighed between six and seven pounds. But suppose they weighed one pound each, and grew at the distance apart each way above mentioned, there would have been 1,742 bushels, at 60 pounds per bushel; or if reckoned at 50 pounds per bushel, which is more than they will weigh to the measured bushel, and very nearly corresponds with the difference made by the Old Hurricane, then there would be 2,091 bushels. Or suppose they are sown in rows 20 inches apart, and 4 inches apart in the row, which I believe is nearer the usual distance; then if the roots weighed one pound each, there would be 1,568 bushels per acre, at 50 pounds per bushel, or 784 if they only weighed half a pound each.

And so in regard to turnips. I can't understand how Old Hurricane can raise so large rutabagas, many of the roots weighing 12 to 14 pounds, and they were nearly all large, and yet not get any more to the acre than he appears to have had. His roots must have been a great distance apart, or there must have been a great deal of vacant ground. In order to show what turnips and other roots will produce to the acre, for given weights of each root, at various distances apart, I have got up the following table. The number of plants to the acre for the different distances apart each way, I have taken from a table in the *Illustrated Annual Register* for 1857, page 384. The table is constructed in a similar manner to one given in Stephens' Book of the Farm, page 439, vol. 1, with this exception, instead of carrying out in tons, I have carried out the gross amount in bushels at the rate of 60 pounds to the bushel:—

Dis. between the rows...	Dis. of plants in row.....	No. per acre.	Weight of each root.	Bushels per acre.....
2 feet.	1 foot.	21,780	12 lbs.	4,357
do	do	do	10	3,630
do	do	do	5	1,630
do	do	do	2	726
do	2 feet	10,890	12	2,078
do	do	do	10	2 815
do	do	do	5	707
do	do	do	2	303
3 feet	1 foot	14,520	12	2,940
do	do	do	10	2,420
do	do	do	5	1,210
do	do	do	2	484
do	2 feet	7,260	12	1,452
do	do	do	10	1,210
do	do	do	5	605
do	3 feet	4,840	12	968
do	do	do	10	806
do	do	do	5	401

The above table is important as showing that it is not necessary to have roots very close together in order to raise large crops, as for instance, if the rows are three feet apart, and the plants two feet apart in the row, with no vancancies, then if the roots average ten or twelve pounds, the crop will be large. It is also important as showing the great importance of having the ground occupied, as a little reflection will make it apparent to any one that when this is not the case the yield will be seriously diminished. It will also be useful to those that are disappointed in the yield of root crops, by enabling them to ascertain the reason, or reasons, why they have not turned out as well as expected, thus showing them how to remedy such deficiencies in the future.—*Michigan Farmer.*

Management of Pastures.

A correspondent of the Mark-Lane Express, in contributing a series of articles on farm economy, makes some excellent remarks on the rearing of stock and the management of pastures. He says,—"Anybody may graze cattle; but to graze them *aright* requires knowledge, tact, and excellent judgment." Never were words more truly spoken. In our own country, for instance, how seldom do we find a really skilful grazier. We see, in passing through the country, pastures gnawed to the very soil, so that the stock is actually pinched for food, and others on which a large proportion of the herbage has run up to seed, the stock kept on them having only grazed here and there a spot, which, as the feed is sweeter on them than it is elsewhere, have been kept short the whole season. This course has perhaps been continued for several seasons, till from the accumulation of "old fog" a large portion of the grass has become sour, so that stock will not touch it unless pressed by hunger; wild plants have sprung up, and are constantly increasing.

It is a rule with the best English graziers, and also with the best in this country, that all pastures should be cleared off once a year, in order to derive the full benefit of the herbage, and to keep the turf in the most productive state. The writer from which we have quoted, makes the foilwoing observations in reference to the assignment of the proper class of stock to different kinds of land, and the management of the pastures. It will be noticed that the stocking of inferior lands with cattle and supplying them with extra feed, is mentioned. It is a matter to which we have several times called attention:

"The fatting cattle are of course put upon his best pastures, which are duly prepared, by rest and occasional manuring, to receive them. In this case he has to exercise his judgment, and purchase or select his stock according to the quality of his pastures. He will place his large oxen on first-class lands only. On his second-class lands he will place heifers, young draft cows, or animals from some of the smaller breeds of cattle. He knows that if he places first-class oxen on second-class grazing lands the balance must be made up by good artificial feeding. The former is the common order of cattle-grazing, but the latter is now becoming the prevailing custom, *i. e.*, to stock somewhat inferior lands with cattle, and supply them with the best fattening food—generally linseed-cake at the rate of from four pounds to seven pounds per day. In addition to the proper 'stocking of land,' he has to watch (daily almost) the state of his pasture. 'The bullock pasture must be kept right;' consequently he has to add or diminish the number of animals in accordance with the season, *i. e*, the growth or declension of his pasture, his sole aim being to keep his cattle in the highest progressive state; failing in which, his profits will not be remunerative. The pasture itself he has also minutely to attend to, or it won't be 'kept right.' The

mowing or chopping up the rough-growing grass, the 'knocking' of the manure deposits; the shelter, the rubbing posts, the waterings, the fences,—all have to be cared for and provided."

Agricultural Intelligence.

The Highland Agricultural Society of Scotland.

MEETING AT PERTH.

The Highland Society was considered this year to hold its meeting under especially favorable circumstances. The entries were known to be good; the locality was one in which the best breeds of the country were likely to show in great force; while, as the last year of the Duke of Athol's term of office, it was concluded, naturally enough, that his Graces's own friends and neighbours would strain a point to support him. But even beyond all such advantages there was for once no "opposition" in the arrangements of the Yorkshire Society.

Excellent as no doubt were some of the classes at Perth, the meeting, as a whole, did not realize all that was expected of it. Without going again very minutely through the catalogue, we only remember three English exhibitors as being represented here—Mr. Booth with his Shorthorns, and Mr. Waluman and Mr. Mangles with their pigs. The Perth, however, was "very nearly" being a most exciting show of Shorthorns. Had Captain Gunter only sent on his stock as he did at Dumfries last year, we should have had the Leeds battle and its subsequent correction in Durham fought out for the third time. But Booth could not cross the Border in '60, and Gunter would not in '61. Just as in the ploughing match, Hornsby would not compete at Edinburgh, and Howard declined doing so at Perth. Much as it sounds like one, there is no amicable adjustment in this, although it generally works conviently enough for those who go into competition. As a rule, the commendations of the Highland Society, in reality, mean little or nothing, and the very official prize-list declines to give them, an example we have continued to follow. As at other meetings, the judges are here instructed to give in, beyond the first, second, and third prizes, two other reserve numbers, of which the fourth is construed into a *high commendation*, and the fifth into a *commendation* simply. More frequently than not, the judges mean nothing of the kind; but the officials are good enough to interpret this for them, and the best of a bad lot remaining becomes highly commended accordingly. The effect of this is often absurd, as in some short roughish classes of Cotswolds, where almost every sheep sent was distinguished by a prize or a commendation; and, when at the first glance, one would imagine the judges must have had a wonderfully clever and even lot of animals before them. Let the Direction of the Highland Society be good enough to remember for the future that a reserve number does not necessarily imply a direct compliment, and that the judges, if they choose to exercise it, have the absolute power to commend as many or as few of the entries as they please. At Perth they might have fairly commended the whole class of Shorthorn cows, which if not a large one was a very good one.

Like a thorough man of the world, the Shorthorn makes himself at home wherever he goes, and, with all the assumption of a leader of *ton*, is now not satisfied till he has the attention of everybody. It was so at Perth, when at one o'clock, on the sound of the trumpet, the barriers fell, and the eager crowd rushed off to the Queens, and Belles, and Brides, just as at Leeds they made for the horses, or well versed literati learn the road to the tea and toast. Not but that the native breeds had some honour in their own country, more especially the shaggy Highlands, looking quite as handsome and more useful than ever. In the generally good classes it struck us there was more depth and breadth about them than we have seen, with scarcely any of that exception which would seem to argue what even a Highlander might be if you did not take very good care of him. They were shown of all colours, yellow, brown, black, and brindled, but with the fawn by far the most fashionable in appearance, and the blacks the least so; the latter, indeed—whether from the mere effect of colour or not, we will not venture to say—had seldom the high character of the lighter hues. The cows, here, again, were a capital class; and Mr. McLaren's first, a "splendid" animal in the best sense of the word, with a wonderful bear-skin coated calf at her side. It is impossible to imagine anything more picturesque than the grouping of this mother and daughter. Then, Mr. Campbell, of Jura, had another of his beauteous heifers, warranted to live and thrive in a country where they have snow from October to June, and from which happy home nothing but the highest of extra rails can still keep them. The Duke of Bredalbane had not only two first prize bulls, but his Grace also ornamented the show-ground with four famous Highland oxen, remarkable for the most magnificent heads and horns. "Good to eat" and good to look upon, surely the Highlander should command his price as "fancy stock," if he can do wathout that top rail?

Another peculiarly national breed is the black polled, not here classified with all the nice distinctions of Galloways, Angus, or Aberdeens, but competing, as they would appear to the general observer, as of one common order.

Still, in their united strength, the entry was not a decidedly large one; and Mr. Bowie declined to show his animals, withdrawing them at the last moment in consequence of a dispute on the danger of contagion, that we have not space to enter upon here, but that seems to us to have

been argued with far more bitterness than was at all necessary.

The Ayrshire must have made something of the same excuse, for at any rate scarcely half of the entry came into their stalls, where Mr. McKean's fine healthy bull, and Mr. Stewart's equally clever younger one, led off. They are both famous prize winners, and it is not often one sees such good types of the "milking bulls" —breeds in which of course the cows show to more advantage. A hundred guineas is coming to be a price to be talked of for an Ayrshire cow, and both Lord Strathmore's were bought of Mr. Drew at long prices, but they were bought well, and we have the authority of the *North British Agriculturist* for recording the heifer as "the most perfect specimen of an Ayrshire brought forward for many years."

As usual there were a number of good crosses and quite as much a matter of course these were with the Shorthorn bulls. The best of them was a very level grand ox, of immense size for his age, fed by the Messrs. Mitchell, and so good that they intended to send him on to the Smithfield Club. High feeding here is an art worthy of all encouragement, but it becomes a very different thing when applied to breeding stock, as Mr. Mitchell should take care to remember. We might very justly impress as much upon the exhibitors of Clydesdale horses, which are generally fed very high, to anything but their advantage. Flesh may cover a multitude of sins, but at the same time it only serves to more palpably demonstrate some of the weak places of the Clydes. A hooded crest, a big carcase, and a fat back will do much to hide a light girth and a weak thigh; while the action of many of these horses is palpably impaired by the process. The aged stallions were, as they always are, a very mixed lot, with some clever compact powerful animals amongst them, and a number of three-cornered things with big ends, and long legs and no middles, that never should be permitted to travel a country. The first prize stallion is of what is known as the large Glasgow sort, a horse of enormous power and weight, but yet superior in his action to the second prize, a compact animal in many other respects to be preferred. The third was also a clever handsome horse; but for appearance far away the pick was Nasmith's mare, with her foal at her side. She was really good looking, cleaner about the legs, and more bloodlike in her character than is the fashion here, but not a bit the worse even for draught on that account; while her foal was very admirable; and when you had them out, they still grew on the eye as something to wish for. The third prize mare had a certain want of size against her, but she was otherwise uncommonly clever, and for farm work as good as could be. Local authority declared the young stallions to be better than their sires or seniors, but some of the fillies had really no character whatever about them, and, by appearances, it would be hard to say what they can come to. Lord Strathmore entered one or two of his recently purchased Suffolks; and Lord Mansfield sent a few of the same sort, but the judges would not look at them. "Nevertheless and notwithstanding" justice compels us to declare that their own first favourites, the Clydesdales, have by no means improved, if even they have maintained their standard of excellence, when this is demonstrated by the Perth Meeting. With the long and well merited repute of continuing to do a great many things they ought not to do, and leaving undone what should have been done, the Executive of the Highland Society still carefully abstains from inserting the homes of the various stallions in their catalogues simply we suppose, because no animal alive is so well known by his name as a stallion, or because all other societies do supply such information.

With that very good exception, the Shorthorn the Scotch agriculturist appears to be well satisfied with what he has. You never see a Devon or a Hereford at a Highland Show; and a cart-horse signifies a Clydesdale. The Cotswolds make little way, and the Duke of Richmond, with Mr Aticheson, and Mr. Skirving, having it still nearly all to themselves with the Southdowns. Then, you never heard of a Scotchman going in against the Thunders, the Owens, or the Meades at Holme Pierrepont. They have a breed of Leicesters of their own by this over the Tweed, so entirely different, or so thoroughly beyond the character of the pure Leicester sheep, that it was gravely proposed at this meeting to make two classes of them; one of English and one of Scotch Leicesters. This was, however, ultimately got over, by agreeing to have none but Scotch judges, who of course awarded all the premiums to Scotch-bred sheep, utterly ignoring those of the Duke of Richmond and Mr. Collie, which were bred from pure-bred rams. There was a very numerous entry of the Highland Leicesters, with many large useful sheep amongst them. It was, in fact, considered a very capital show of them; but they had little type left of high-bred symmetrical English sheep, and the most refined points have clearly been sacrificed to size and hardihood. This last recommendation is one of great matter with the Scotch farmer, and never did the black-faces show better, and never were they in such favor as at Perth. The way in which they lived through the last winter will not soon be forgotten. They really seem to have improved, too, in form, and the most useful properties; while their uniform style was very noticeable, despite the length which the several sections ran. The active, handsome headed rams, with their well-twisted horns and dark muzzles, give, as we have often had occasion to say, a distinctive character to these meetings; but it is not as a "fancy" animal that they are to be appreciated; for general opinion now goes to declare there is no more paying sheep than the Blackface, which will live well where many other kinds would die.

The good-looking Cheviots, for example, are beginning to be regarded as a little "soft;" and there was not a small display ot them here. Still their decline can be but temporary, and as native sheep of the country, some of the best farmers always hold to them as worthy of careful cultivation.

THE IMPLEMENTS.

[There was as usual a large amount of implements and machines from the principle makers in the United Kingdom, which our space will not allow of particularizing.—] Among the extra machines may be mentioned the apparatus for dipping sheep, shown by Caruthers of Dumfries, in which the tub is graduated so as to prevent mistakes in measuring the non-poisonous composition of Macdougall, and the waggon which conveys the sheep from a complete drainer, saving the liquid.

On Thursday afternoon, Messrs. Howard's steam cultivator was at work at Frairton, half a mile from the show yard, and many persons inspected the trial. The field was a ley of long rough grass, on a good soil, abounding, however, with stone and boulders. The three-tined grubber worked first 8 inches deep, and then crossed the work 10 inches deep, driven by a double-cylinder 8-horse engine. This was only to show the action of the machinery, which we understand is finding customers in Scotland. Messrs. Howard have not competed for any prizes at the present show. (Abridged from the *Mark Lane Express.*

Exhibition of the Royal Agricultural Society of England, at Leeds.

[Abridged principally from the *Agricultural Gazette.*]

The Agricultural Society may be congratu lated on a most successful anniversary at Leeds. Never have its yards been better filled with illustrations of the live stock of the farm—rarely have they more perfectly illustrated the machines of Agriculture—and of certain classes of machines never has the trial been so careful or so clearly indicative of high merit. Steam ploughing is at length addmitted by every one to be practically accomplished. The reaper and the mower by horse-power are now everywhere being introduced, and the skill and ingenuity of machinists are being everywhere doing more cheaply and more perfectly, and more rapidly, that which has been hitherto been done tediously and painfully by horse or hand. The proof of all this given at the Leeds Meeting has interested both townsmen and agriculturist, and immense crowds of spectators have been daily present, both at the trials of machines, and latterly in the yards where they are exhibited.

The has been the attendance on the four first days of the week.

On Monday,	2,027	visitors paid	£585	19	0
On Tuesday,	10,250	" "	1201	5	0
On We'day,	18,823	" "	2352	17	6
On Thur'day,	74,000	" "	3700	0	0

So far, therefore, as hnown when we go to press, the Leeds Meeting compares favorably with those of Warwick and of Chester, which stand highest on the list of the Society's annual experience.

The show-yard of the Agricultural Society is certainly an admirable ware room. It is difficult to imagine any market place to which an agricultural machinistwould be better pleased to bring his goods. Nowhere is there such a thoroughfare of customers—much mixed up no doubt with mere idle sightseers and "excursionists"—yet amongst the multitude which slowly pass by each stand are men from every English county and probably every European country who need or use such tools as are there exhibited. And they are all now wide awake to the necessity of economising labor, and the importance of cheapening production by the aid of machinery. One would think that the makers of such machinery would gladly submit to almost any drawback and meet any difficultw rather than lose the opportunities which such a gathering affords. And yet some of our leading manufacturers have declined being present. Messrs. Ransome of Ipswich, Messrs. Garett of Saxmundham, Mr. Samuelson of Banbury, all first class manufacturers, do not exhibit their machines, notwithstanding such an opportunity of selling them.

Unquestionably the leading feature of the Leeds show has been the thorough examination given to the subject of steam ploughing by the three most competent judges appointed by the Society. For a fortnight they have been submitting the existing machinery to every test by which merit is determined, nnd the details of their award will be found on another page, It has been given almost wholly in favor of Fowler's apparatus as now constructed, and we cannot doubt the soundness of their decision. The advantage of steam of a cultivating power lies in its especial adaptation to the tilage of stiff clay soils, and the superiority of Fowler's system was more than ever apparent in the clay land trials to which it was subjected.

It is in the distinction thus given to a new implement thas the responsibility of the Society's judge's chiefly lies. The award of merit in a competition of old implements, such as sowing machines for instance, which while old are costly, will probably not affect their sale at all. Messrs. Hornsby's implements, Messrs. Garrett's implements, Mr. Smith's implements, have each their respective countries, and they do not, cannot indeed, encroach on one another. A man who has used a drilling machine for 20 or 30 years properly believes that he wants no guidance from an agricultural society in the purchase of a new one; and accordingly makers of sowing machines

do not attach much importance to the prizes by which the Society chooses to distinguish one or more among its rivals. It is when such distinctions affect new apparatus that they are most influential. There is an enormous hitherto untouched field before the makers of steam plough apparatus for instanee, and the persistent award of judges, after patient examination into the rival methods, in favor of Fowler's apparatus cannot but be of the utmost importance.

Recent agricultural statistics declare the wheat lands of this island to exceed 4,000,000 acres, the Barley land to approach 3,000,000 acres, the Oat crop to exceed 2,000.000, the Potato crop to exceed 700,000 acres, the Turnip crop each year to approach 3,000,000 acres, and other crops to exceed 700,000 acres, while 900,000 or more are in bare fallow. At least two-thirds of all this—nearly 15,000,000 acres, can be cheaper ploughed and worked by steam than it can by horses. Here are 10,000,000 acres to be cultivated in the year, 15,000,000 to 20,000,000 acres of ploughing to be done—2,000,000 day's work for a 12-horse power engine. But there are not more than 120 days in the year on which it is generally convenient to set the engine ploughing—and we therefore want 15,000 steam-engines to do the work. Mr. Fowler, Messis. Howard, Clayton & Shuttleworth, and Tuxford, and all the agricultural machinists of the day, may set to work in concert or in rivalry as they please: there is ample room for all; and more than all will accomplish for many years to come. Of course a great proportion of the arable land of the country is mixed up with pasture land in small proportions, which must be worked by horse-power—unless by steam for hire; and there are vast tracts of plough land in the hands of those who have not capital for the operation of steam ploughing, but that a large and ultimately increasing remainder will be cultivated by the steam plough and steam cultivator we cannot doubt. If three-tenths of the agricultural horse power of England may be displaced by steam (and this will leave a remainder amply sufficient for the cultivation of small farms and for the work of carriage and other lighter operations on large farms), then 240,000 horses have to be displaced, and their work will be easiely accommodated by less than three-quarters that quantity of horse-power in steam, thus bringing out the quantity of engines needed as 15,000 of 12-horse power, at which it was estimated before.

It is not, however only for this country that our steam-plough makers will be at work. Every monthly mail brings our machine-makers some hundreds of orders from Australia—the export trade in agricultural machinery to Germany and France is a greatly increasing trade—our leading manufactureis have agents in Paris, Vienna, and other leading continental cities—Russian proprietors losing the labor of their serfs are seeking independence of them—the great international gathering is to take place next year. Who can doubt that the work of providing steam cultivating apparatus for all who in this country and elsewhere are about to cultivate their land by steam will be almost an impossibility during the next few years?

There is no one who has had a harder or more uphill fight than Mr. Fowler for the attainment of the success which is now about to reward him. He has throughout contended for a system adapted to better than the average circumstances of English farming—to large fields, systematic agriculture, and the great scale generally; and thus he has had not only to convince the farmer of the merit of his apparatus, but of the economy and profit or a higher system of agriculture altogether than is generally prevelant. His methods are at length proved applicable also to more limited operations, and confined positions; but it is still in the open country, and on the great scale that his plans are most effective. Confident in their ultimate success, he has seized on every possible improvement of which they were capable; and at enormous cost of money, labor, resolution, patience, thought, he has at length achieved pre-eminence.

The Show-yard was an almost level field of about twenty-five acres—the implement and miscellaneous sheds extending in breath over about three-quarters of the field, and in length over more than one-half On the south side, running the whole length of the field, was a space for showing the machinery in motion. The other part of the field was occupied by the cattle sheds. The show of Implements was "by far the largest that has ever taken place"—the catalogue of "agricultural implements, machines, and other articles for farm purposes, manures, seeds roots, flax, wool, &c.," alone being a volume of 401 pages, embracing about 6000 articles. Of purely agricultural implements there were about 160 exhibitors, and the miscellaneous department there were some 180. There were 36 sheds devoted to implements, some of them 252 feet in length and 33 of them 120 feet wide. There were 24 sheds appropriated to stock. The timber used in the construction of the sheds is to the extent of 23,000 cubic feet of boarding and the canvass used in covering them was estimated at 15,000 square yards.

In round numbers the amount of Prizes offered may be stated in the aggregate as about $16,180—namely, for steam cultivators, $1,000, other implements, $1,600, cattle, $3,750, horses, $3,675, sheep, $2,900, pigs, $9,00 cheese, wool, butter and flax, $1,400. for agricultural servants, essays, and building designs, $950.

As to Cattle, there were 200 entries of Shorthorns, in seven classes. The first class, bulls not exceeding 6 years old, numbered 38—the first prize of 30*l.* was awarded to Lord Eversham; second, 15*l.*, to James Haugton Langston, M.P.; the third prize of 5*l.*, to Mr. James Dickenson. Among forty entries in the second class young bulls more than one year old, the three prizes were awarded—first, of 25*l.*, to Mr. J. Taylor; second, of 15*l.*, to Jonas Webb, Esq.;

the third, of 5*l.*; to Sir Walter Calverley Trevelyan, Bart. From class three containing thirty-seven entries of bull calves, above six and not exceeding twelve months old, two were awarded prizes. No. 1, 10*l.*, to Mr. C. Howard; No. 2, 5*l.*, to Mr. H. Ambler. Class 4 represented fifteen cows, in milk or in calf, above three years old. The first prize of 20*l.*, was awarded to Captain Gunter, for Duchess Seventy-seventh; the second of 10*l.*, to Richard Booth, Esq., for Queen of the Vale; the third prize of 5*l*, to Lady Pigot, for Second Duchess of Gloucester. In Class 5, fourteen heifers in milk or in calf, not exceeding three years old, Captain Gunter too the first prize of 15*l.*, for Duchess Seventy-eight, a twin, the other twin being highly commended; Mr. R. Booth following second for Soldier's Bride; the third prize of 5*l.*, to Mr. J. Robinson. Class 6 represented thirty-one yearling heifers, Captain Gunter carrying off the first prize of 15*l.*, for Duchess Eighty-three; second, 10*l*, to the Hon. George Edwin Lascelles, for Gracillis; third of 5*l.* to Mr. J. Peel. Class 7 contained twenty-five entries of heifer calves above six and under twelve years old—the first prize of 10*l.*, to S. Majoribanks, Esq.; second prize of 5*l.* to Mr. J. Atherton.

The Show was held rather out of the range of either the *Herefords* or *Devons*, which consequently were shown in small numbers in comparison with Short-horns. Each was divided, like the Short-horns, into 7 classes; and in class 1 of the Herefords, of aged bulls, the prize-takers were Thomas Rea, first and second, and George Bray, third; class 2, yearling bulls, Messrs. R. Hill, E. Wright, and W. Perry; bull calves, Richard Hill and J. Williams; aged cows, Messrs. Naylor, P. Turner and R. Leyshon; heifers in milk or in calf, Messrs. Turner, Naylor and Leyshon; yearling heifers, Messrs. Perry, Naylor, and J. Marsh Reed; heifer calves, the executors of the late Lord Berwick and Mr. Williams. For Devons, the prizes went for aged bulls, to Messrs. J. Bodley, G. Turner and Prince Albert; yearling bulls to Messrs. W. Farthing, J. Merson and G. Turner; bull calves, Mr. Farthing and Prince Albert; aged cows, Prince Albert and Mr. Turner, no competition for third prize; heifers in milk or in calf, Mr. E. Pope, first and third, M. J. Hole second; yearling heifers, Mr. Farthing first, and Mr. J Merson second and third; heifers and calves, Messrs. Davy and Turner.

Of the *Suffolk Breed*, for which separate prizes were also awarded, there were only two exhibitors. Of "other established breeds," neither Short-horn, Hereford, Devon or Sussex, the show was also small; Alexander Bowie, carried off 10*l.* for a polled Angus Bull; and Lord Sondes 10*l.* and 5*l.*, respectively for two Suffolk heifers.

Among the Sheep, W. Sanday, Lieut. Col. Inge, and George Turner, were the prize-takers for *Leicesters*; W. Rigden, J. & A. Heasam, Lord Walsingham, the Duke of Richmond and the Earl of Radnor, for the South-downs. The show of sheep is spoken of as particularly good. "The Leicesters and the Cotswoods are truly superb sheep, and of the two the Cotswolds carry the prize, as the breed the best represented by the general superiority of the animals exhibited. Of the short woolled breeds, the Shropshire is the best represented, next to the Shropshire the South-down."

The Pigs constituted a prominent feature of the show. Yorkshire, famed for pigs, large and small breeds, contributed largely, but other counties sent for competition pigs worthy of Yorkshire.

"Above one hundred pigs gave ample scope for the connoisseurs in pig points. The blood horses and the Short-horn cattle were not more closely scanned than the pigs. The extreme weights of the larger animals were variously stated at fifty to seventy stones and upwards. The fat pigs required to be assisted to rise. The middling fat were rather out of temper with the constant poking they were subjected to. Altogether, the pig exhibition was a most remarkable show of what can be effected by selection."

TRIAL OF STEAM PLOUGHS.

The trials of steam ploughs and cultivators to which so many have looked forward with interest are now going on. We must as yet satisfy ourselves with the simple facts of quantity and quality of work done without saying anything about price. Our readers can calculate for themselves for the present, but as soon as anything reliable is obtained, the final particulars shall be at once placed before them.

It must be pretty generally known, and yet we may as well repeat it, that the Royal Agricultural Society offer two prizes; the first of one hundred pounds to be awarded in one sum to the exhibitor of the best application of steam-power to tillage purposes, the second of one hundred pounds, which may be awarded in one sum or split up according to the suggestion of the judges.

For the purpose of testing the various systems of steam cultivation now before the public, the society has obtained—about 8 miles from Leeds—two fields, one of 32 and another of fifty acres. These fields are immediately contiguous upon the right of the Leeds and Lilley road. The last crop upon one has been turnips, which was fed off by sheep, and since then the land has been stirred, and now presents a bare surface. The next piece is a Clover lea. Both fields are well situated, and admirably adapted for the trials of ploughs and cultivators. Upon both of them a 6-inch furrow is said to be good 3-horse work, but no dynamometrical experiments have been made to prove this much.

On Monday the 1st July, the three gentlemen appointed as judges, Mr. Sewel Read of Plumstead, Mr. Owen Wallis of Overstone Grange, and Mr Owen of Rotherham, assisted by Mr Amos Sothwork, Consulting Engineer to the Royal

Agricultural Society, met to set out the work for those competitors who were rivals for the first prize. What we may term the Turnip field was selected for this purpose, and those who had taken up their position on Tuesday were as follows; Romaine, with his locomotive Rotary digger; Fowler, with his large 12-horse-power engine traversing the headland; Richardson and Darley-cum-Beard, with a locomotive engine, and double furrow plough pulled behind it, and also a stationary engine, Beard's windlass and a double furrow plough hauled by a rope, and ploughing in ridges; Roby, & Co., with ten-horse stationary engine and windlass combined; Wilson with stationary six-horse engine, the windlass being affixed beneath the boiler; and Messrs. Howard with a ten-horse-power engine. The implement employed by Fowler was the 4-furrow plough, this being converted into a "digger" and a "cultivator;" that employed by Wilson (which however did no work), was Mr. Smith's No 3 "Smasher;" Roby worked with a newly patented 3-furrow plough, and the Messrs. Howard with their new patent cultivator already described in these columns.

On Tuesday at noon Messrs. Howard commenced work upon a 4-acre plot, which they finished in about five hours, taking a breadth ach way of 4½ feet to the depth of 7 inches; but as the rock lay near the surface the operation took more time than was absolutely needed for it. Upon baring the bottom the necessity was shown for a second grubbing to make a perfect job. The grubber accordingly crossed the work on Wednesday, but though the bottom was thoroughly cut, the surface was too rough to fulfil the judge's conditions. A good seed bed as for Barley was required, but having crossed the work the surface was rougher than it was after the implement's first journey, and required a roll and a harrow before it could be ready for the drill. In another part of the field, Mr. Fowler had a plot of 4 acres assigned to him, upon which he at first commenced with his "digger," followed by a harrow, swinging from one side, and which was changed for the cultivator at a subsequent period during the same Tuesday afternoon. But neither the digger, which is formed by 4-furrow plough frames, armed with Cotgreave breasts, and by which the soil is heaved up and deposited as though left by the spade, nor the "cultivator," which has been often described, made the required seed bed for Barley. The surface was rougher than Howard's. It was clear enough that the operation was too strong, and that too much of the churlish subsoil was made to replace the tilth which was cast down. Both Howard and Fowler were in the same predicament. The object was to produce a more conminuted surface with no greater expenditure of power. Romaine showed them how to prepare a seed bed for Barley or anything else, at one operation. This rotary digger, now too well known to need description, performed to the admiration of the vast crowds of people who flocked to witness the novelty. Never has the pet theory of circular motion, as applied to soil culture, been better exemplified than it was on Wednesday at Garforth, when Mr. Romaine's implement traversed the bounds of the 4 acres measured out to him, and worked towards the centre. The rotary cultivator has never done so much, or so much so well as it then did. The soil was most beautifully fitted when that ponderous machine and its alarming tail had passed over it any seed the sower might desire to deposit. The depth was a uniform 6½ inches, and there was no doubt about every particle of the soil having been moved. The operation was fully worth twenty shillings per acre; and to accomplish it somewhere about twenty-horse power was exerted, and two men employed. The depth as we have said before, was about 6 to 7 inches, the length of the digger 7 feet, the space passed over in a minute 25 yards; so that, including stoppages, about 7 to 8 acres might be cultivated during a 10-hour day. But, excellent as the work was, no great quantity could be done, The boiler was weak, and refused to perform its duty. This hindrance, however, was simply accidental, and might have been obviated by more care. Like so many of these mechanical contrivances, no trial was given before it left the shop where its material existence commenced, and its weak points remained to be detected therefore upon the Garforth field instead of at home, to the mortification of those concerned.

The second prize of £100, which may be broken up and apportioned to various parties according to the decision of the judges, was intended to bring out sets of apparatus which could be employed with the ordinary portable farm engines of 8 or 10 horse power commonly found upon farms of a medium size, and always upon larger ones. The Judges directed those who attended to compete for the prize to set to work upon about 4 acres each of the Clover ley. This they were to cultivate with a pressure of 45 lbs. of steam. Hayes & Crowley, Fowler, Kirby & Beard, commenced upon these plots on Wednesday afternoon, the 3rd; and Howard, who did not finish crossing the Turnip field plot till late the same afternoon, on Thursday morning.

Of Kirby and Beard it is not necessary to say anything, since they were not able to conform to the conditions, and were obliged to plough the land. Hayes and Crowley were only united to show the merits of their several inventions; Hayes of his hauling windlass, Crowley of his cultivator and mode of traction. Of the latter it will be necessary only to say that it is a modification of Fowler's plough, in form, resembling the juncture of two triangular scarifiers back to back, balanced at the point of union, upon a pair of large wheels. Of the windlass which hauled it we may mention that it is remarkable principally for dispensing with the services of a man, and allowing the engine to keep running when the plough is not at work. The course of the plough in fact is under the command of the

anchor-men, who have nothing to do, when required, but to jerk a cord, which traverses the field, and by withdrawing a bolt, and disengaging a sliding bar, shifts the driving strap from either of the two pulleys in connection with the drums, to the loose one between them. There are points about this invention which are well deserving of notice. Messrs. Howard employed a 10-horse engine, and set his pretty windlass beside it. A connecting shaft fitted with vulcanised india rubber universal joint drove the latter with great ease and regularity. The implement used was the cultivator, so fitted with shares as to cut all the land. The depth of the work was 6 inches, the measure of about 6 feet, the length of the plot 304 yards, and its breadth 54 yards.

Mr. Fowler came out in quite a new, or to speak more properly a new *old* guise. He started from the stationary engine system, and has been at much pains to improve upon it, as he considers, by the introduction, 1st of engine and anchors, traversing the headlands, and then of engine and single anchor, traversing opposite headlands, the plough simply being driven up and down between them. There were many men however who entertained a great objection to a headland upon a headland, because they urged that the headlands were thereby rendered unfit for cultivation and would grow nothing. There were others who said they could not afford to buy an engine especially adapted to steam cultivation, but would be glad to adventure upon a simple apparatus to be driven by an engine suitable for other work. Mr. Fowler very wisely therefore set about doing what he was asked to do, and having simplified his tackle, introduced the clip drum, and contrived to work his plough with a taut endless rope perfectly suspended, made one other step, and produced a separate windlass or drum, capable of being driven by any 8-horse engine whatever.

Like Howard, he drives the drum with a spindle and universal joint. He works with an 8-horse single cylinder limited to 45 lbs. pressure, and carried 3 furrows 7 inches deep. On looking over the work it struck me as very good — There was a good inch difference between Howard's and Fowler's, but Howard finished in less time than Fowler, the former being 4 hours 36 minutes about his work, and the latter about 6 hours. That inch difference in depth indicates more power than is generally imagined, the ratio of power required increasing in inverse proportion to the depth. Howard's working appeared better broken, Fowler's to be in the largest clods. Howard $3\frac{3}{4}$ acres, ploughed five to six inches deep in 4 hours 36 minutes, excluding headlands, shows the work to have been done at the rate of 8 acres in 10 hours. Fowler's $3\frac{3}{4}$ acres, broken up in six hours, 7 inches deep, shows a rate equal to $6\frac{1}{4}$ acres in 10 hours. But we must remember that while Fowler worked with an 8-horse single cylinder engine, with 45 lbs, of steam pressure, Howard employed one of 12-horse power, double cylinders, with from 40 to 50 lbs. of steam pressure.

It is difficult to come at results, but as nearly as we can estimate, the Howard did three roods per day for every horse power engaged, while Fowler did pretty much the same, only his work was deeper and his power less. The work on both sides, however, was of a very superior kind, and such as gave great satisfaction. Both Messrs. Howard and Mr. Fowler secured several customers, and certainly made great way with the public.

But while Howard was doing this cultivating, Fowler had set out his big tackle to plough an 8 acre piece of the same clover ley. He commenced this on Thursday afternoon, but was obliged to give up after he had made two bouts, in consequence of a breakage. On Friday he continued, and finished it in 8 hours 10 minutes exclusive of the work done on the previous day. Messrs. Howard moved to an adjoining plot of like dimensions on Friday, and competed with Fowler for the production of a seed furrow.— They worked for the first time during the trials their turn-over plough, which takes three furrows. The work it performed was exceedingly good, having what some people would call a much better harrow-edge than Fowler's, and being more compressed. There were those on the ground who preferred Fowler's furrow, however, shattered as it was ; it was certainly a full inch deeper than Howard's. He employed his 12-horse engine, carrying four furrows at once, 7 inches deep. Howard employed a 10-horse double cylinder engine, took three furrows 6 inches deep, and was $14\frac{1}{4}$ hours engaged upon the piece, allowing for stoppages, with sixty lbs. pressure. Headlands are not included. We have on this showing $4\frac{1}{4}$ acres ploughed per day of 10 hours at a cost of something like 7*s*. 7*d*. per acre, while horse labour upon the same land would have cost fully 10*s*. per acre at the same depth.

On Saturday Fowler was moved to another piece on the some clover ley. The contents were $6\frac{1}{2}$ acres. He took his small tackle to it with 8-horse single cylinder engine, and performed the greatest achievement yet recounted in the annals of steam culture. Carrying four furrows inches deep, with 50lbs. of steam, the whole 6 was completed in 7 hours 38 minutes, which is equal to 4-5ths of an acre per hour, or about $8\frac{1}{2}$ acres in 10 hours. The expenses calculated in the usual way, amount to 4*s*. per acre, so that in this case there seems more disparity between the two competitors than in any former instances.— These figures are of course only approximate, but still we believe in the main they will be confirmed by the report to be issued by the Judges on Monday with the awards.

☞A great deal of conversation has occurred upon the field respecting the cause of the difference between the two systems, and there seems no other way to account for it than by suppo s-

ing a vast amount of power to be absorbed by the Howard slack rope, which is saved to propel the machine in Fowler's. Some experiments have in fact have been instituted with a view to test this matter, and we append some notice of them which has appeared in the *Leeds Mercury*.

To those who are not acquainted with the facts relating to the traction of wire rope arrived at in various collieries, will hardly be prepared to believe that 800 yards of 2¼ inches steel rope, running on the ground, will take over 5-horse power to pull it at a speed of three miles an hour, and that the same rope efficiently carried on well made porters, can be pulled by three quarters of a horse power. It is not necessary, however, to refer to colliery experiments. Not later than Wednesday, Mr. Amos directed his attention and that of the judges, to the same subject, and by the aid of his dynamometer brought out the following most astonishing results. To drag 450 yards wire rope without porters, weighing 4 lbs. per fathom, it required a power which may be expressed as 527 lbs., while the same rope, supported upon porters, required a power equal only to 58 lbs.

Another experiment was made yesterday under the superintendence of Mr. Amos, jun., which led to nearly the same result, and it will be followed by several in the course of this day which will, we believe, go far to establish as an agricultural fact, what is already acknowledge to be a fact in the colliery districts, that the power required to drag a slack rope upon the ground without supports is equal to one-twentieth of its weight.

Messrs. Roby & Co. did a little work on Friday and Saturday, but nothing that requires notice. On Saturday, Hayes, with his windlass hauled Crowley's cultivator across the work which had been done on Wednesday, and Thursday by himself, Beard & Kirby, Fowler & Howard in the Clover field, but with no very good results. Subsequently Howard's steam harrow was sent accross the same work, with capital results; and then a Norwegian harrow, which did little or no good. The trial field was closed early on Saturday afternoon in favor of the half holiday movement, which came as a welcome reprieve to all concerned in these proceedings, whether judges, exhibitors, workmen or reporters It had been trying work. Some portion of the time the weather had been cold, wet, and dusty too, and at no time, except Saturday, very fine. The heavy thunder storm on Sunday made the Clover ley plough more easily by nearly one cwt. per furrow it might be conjectured. There must be some truth, too, in this conjecture, because whereas Howard, engaged upon precisely the same work, worked at 60 lbs. pressure on Saturday, on Monday he required only 42 lbs. This fact shows how careful the judges should be to insure that every trial is commenced and ended on the same day, as circumstances may be so changed within 12 hours as to render the experiment valueless.

The judges throughout have acted with the utmost fairness and patience, doing all that could be desired of them. Excepting in one particular, they have, we think, given unbounded satisfaction. It has been said that Fowler has been allowed to go beyond his boundaries to plow his plot and its headlands, when he should have confined to the 8 or 6 acres allotted to him, and with that space to do all that was required, just as though a stone wall had enclosed the space. It might have been well perhaps to have confined him to such a completion of his work, and probably he would not have shown off to so much advantage as he had if such had been the directions; but still as he does not pretend to do his headlands, or at least only the one upon which he runs, leaving the remainder for a horse plough, it seems scarcely necessary to take much notice of the matter. Of course the judges take cognisance of the fact, and will make deductions they think fit for it, so that if their report appears on Monday, the public will not have been much misled by the apparent gain Fowler has obtained from this cause. Altogether too much is made of this headland questien, and some people propose to cut it very short by laying down permanent engine ways throughout their farms, where the hedges and hedgerows and ditches now cumber the land, and beautify the landscape.

On Monday the judges having some idea that a three cornered bit would prove a very difficult morsel to Fowler, directed hlm to set down to one of the character, which he did. He did this a little less nimbly than Howard would have done, and was stopped by some derangement in the contrivance for gathering slack rope on the plough; but he performed the work and then steamed down to take up his position upon the ridge and furrow of the heavy land in Mr Furnes's occupation. whither Howard followed him. Mr. Fowler's 12-horse self-propelling engine set down to a six-acre plot in half an hour,and worked a three-furrow plough. One end of the field was a fearfully stiff clay, which almost over taxed the strength of the apparatus, while the remainder of the greater length of the furrow was land in which four or five furrows might have been driven with ease. The 12-horse engine kept on with great difficulty, and finished the piece in about nine hours and ten minutes, cutting a furrow in some places 7, and in others 9 and 15 inches deep.

Mr. Howard after bravely grappling with the difficulties of the position,abandoned the plough for the cultivator, and with better success. The plough having only been recently invented and not much tried, requires strengthening in certain parts before it is ready to cope with such tremendous clay as it was expected to pierce and lay in furrows on Tuesday. With the cultivator Howard was only 15 minutes in time after Fowler, working with a 10 horse engine. A second plot was then measured to each, on which Fowler with the small tackle and 8 horse engine and 50 lbs. pressure, carried two furrows 7 inches deep; and Howard, with 10-horse engine and 40 lbs. pressure, going a little wide

and not quite so deep, started next to him. They were both in work when we left, and more land is apart for them, so that it will be quite Saturday before they finish.

It will seem at once that the trial since the second day has laid between Howard and Fowler There are those who know how the award will be made. We will however venture upon no surmises, and will only record our great satisfaction with the trials as a whole. They have been conducted in a most business like and impartial manner, and all must wish, if ever they compete again that they meet with the urbanity and consideration displayed by Messrs. Read, Wallis, and Owen. To Messrs. Howard, Fowler, and all concerned, the thanks of the public are due in an especial manner for coming to contest for the prize, and for the exhibition of so much perseverance and temper under circumstances calculated to impair both.

Cattle Feeding in the West.

The *Rural New Yorker* gives the following description of the mode of feeding cattle by an extensive grazier and dealer in the west, who occupies some twenty-five thousand acres of land:

Mr. Funk usually winters over from 700 to 1,000 head of cattle, and stall-feeds for early spring market from 300 to 500 head. He markets his stall-fed cattle about the first of April. He buys cattle all the time, whenever he can do so profitably. Those he sells in the summer and fall are generally three years old. The class he stall-feeds are generally four years old. The Eastern reader will think it a queer kind of stall feeding, when he is assured that not one of these animals goes inside a stall or is tied up during the winter. A little further on we will give Isaac Funk's definition of stall-feeding. He prefers to buy cattle (steers) the spring they are two years old. They usually cost then, if good ones, from $18 to $25 per head. These are kept one summer, one winter, and the half the next summer, when they are in condition to market, and will average from $45 to $52 per head. He winters his cattle on shocked corn. The steers that are to be wintered through and marketed in mid-summer are "strong-fed" Those that are to go to market the last of March or first of April, are stall-fed." The difference in the two two modes of feeding is that the bullock that is being stall-fed gets all he can eat and a good deal more, while the one that is strong-fed, gets enough to keep him thriving finely all winter—gaining in flesh and growing too. The corn is drawn from the field on wagons, to the pasture or lot where the cattle are herded One man feeds from 75 to 100 head. And this care occupies him from early morning till late at night. He rises and eats breakfast by candle light, and draws corn with from two to four yoke of oxen—the amount of team depending upon the condition of the soil—all day, and returns and eats his supper by candle light again. Mr. Funk says the true way to feed is to provide two fields for each company of cattle. Feed the cattle in one field to-day, and in the second to-morrow; to-morrow turn one hog for every strong-fed, or two hogs for each stall-fed animal into the field in which the cattle were fed to-day; changing each day, the hogs following the cattle. He says one acre of good corn will winter one bullock if strong-fed; if stall-fed it will require one acre and a half per bullock. The cattle have no other feed, and no protection, except timber, if they happen to be feeding near it.—Salts his stock with this feed about every third day, and provides them plenty of water. Beef if fit to go to the New York market, sells here at $3 to $4 per cwt., gross; packing cattle at $2 to $2 50 per cwt., gross. He has not marketed cattle in Chicago for four years. It used to be his market. When he ships East it is via Joliet cut-off, through Michigan and via the Suspension Bridge to Albany and New York.

Sale of the Babraham Southdown Flock.

On July 10th this world-renowned flock of Mr. Jonas Webb, was sold be Auction, and dispersed among all countries, where agriculture is a leading object of pursuit. Among the 3000 spectators on the ground were the owners or representatives of every Southdown flock of any distinction in the United Kingdom, with a large number from foreign countries. We are happy to observe that Canada was represented at Babraham, Mr. Stones brother in England purchased for him two splendid Shearling Rams, which have safely reached Guelph, in excellent condition. This importation of England's best blood will be of the greatest benefit to Mr. Stone's already excellent Down flock, and ultimately to the breeders generally of that valuable variety throughout the Province. Some of the sheep fetched enormous prices. The highest sum was obtained for a two year old Ram, sold to Mr. J. C. Taylor, of the United States, for 260 guineas !—

In all 968 sheep were sold; 99 two-year-old and aged rams fetched £3062 7s., 106 shearling rams realised £2710 1s., 199 shearling ewes made £2203 19s., 105 two-year-old ewes were sold for £813 15s., and 455 older ewes realised £2142. The whole of the Babraham flock above the age of lambs was thus disposed of for the sum of £10,922, averaging £11 5s. 7d., apiece. The lambs of the year remain on hand, to be disposed of next year, when Mr. Jonas Webb will finally give up the connexion with South-

down breeding which has made his name so widely and so honourably known.

In further illustration ef the success which Mr. Webb has uniformly gained, a brief account of the prices which his sheep have realised, since their celebrity first became an established fact, may not be altogether uninteresting. It seems that the conviction first began to dawn on the agricultural mind that there was nothing like Mr. Webb's breed of sheep, for symmetry, wool, and mutton, about 1835, in which year 100 sheep were let at Babraham, at an average price of 15 guineas, and the highest priced tup realised 51 gunieas. From that time success has been continuous. In 1839, a tup of Mr. Webb's let for 74 guineas; in 1841, 100 guineas was the highest price, and the prices ranged from that sum downwards in the ten succeeding years, the average of the whole letting being generally about £22. The following have been the results of the lettings during the last eight years :—

Year.	No. Let.	Average Price. £	s.	d.	Highest Priced Tup.
1853	71	22	6	3	130 Guineas.
1854	75	25	4	3	102 "
1855	77	25	15	2	170 "
1856	77	33	1	4¼	150 "
1857	65	27	17	7½	197 "
1858	61	21	0	0	75 "
1859	54	25	9	3	70 "
1860	60	23	1	0	129 "

Thus the sheep have maintained their reputation, and Mr. Webb has clearly experienced no dimunition in his profits.

In reference to this event, which contributes quite an epoch in grazing, the *Cambridge Chronicle* observes :—

For upwards of thirty years, we and our predecessors have had the gratifying task of recording Mr. Jonas Webb's annual sheep-lettings; and it is not without some regret that we perform that duty for the last time. The name of Jonas Webb has long resounded throughout the agricultural world in connection with the celebrated Babraham flock; no man has gained and maintained so high a reputation as a breeder; and he now retires from the duties he has so long performed with credit and honour to himself and with the good wishes of all agriculturalists, albeit with grief on all hands at the loss of his services in the special field in which he has laboured. For who can contemplate without sorrow the absence of those cheerful annual gatherings which made such an agreeable July red-letter day in the farmer's life, where the genial smile snd general hospitality of the host and his family spread comfort and happiness to all around; where so many valuable opinions were interchanged; where new views were gleaned from men of science and agricultural fame from all parts of the civilized world; and where the wit and vivacity of him who usually officiated as chairman were the source of hilarity and enjoyment to all?

But Mr. Webb retires, and leaves to younger, though not abler men the duty of maintaining and perpetuating that breed of usefnl sheep which, through him, has gained such a world wide celebrity. Mr. Webb, perhaps, feels that he has realized sufficient by his enterprise, and cares not for the contiuuance of the anxiety and labour which such an occupation requires.—Hale and hearty though he be, and God grant that he may long remain so, he feels that declining years will make the task more irksome. As it is, he retires in the full zenith of his fame, and on other shoulders devolves the duty of continuing the great work which he has so successfully carried on; it may be that others will not posses the same elements of success; or it may be that other districts will not prove so favourable to the rearing of this famous animal; but the Babraham breed will ever maintain its popularity, and will be sought after and preserved when Jonas Webb shall be no more.

Durham Agricultural Society.

With reference to the recent Exhibition of this Society at Darlington, the *Mark Lane Express* observes :—

That at Darlington—situated in the vere heart of the richest pastures of Durham, wherr the elder Collings originated, and the younge, Collings still, with a strong tenacity, cling tof and breed, and feed, and rear the noble breed o-Shorthorns—there should be a collection of cattle brought together, which was not only excel lent, but represented the animal in its truest and most genuine state, without any of the many appliances having been brought to bear of nursing nnd overfeeding, was not to be wondered at.

Here were animals with the pure Tees-water running in their veins, pastured on the rich loams that adjoin the banks of that classical stream; not nursed and pampered in a rigidly-ventilated byre, but made to breathe the purer air of the open country. For besides Captain Gunter. with his Duchesses; Lady Pigot, with her not less exalted, but more varied strains; Mr. Booth. with his Soldier's Bride, Queen of the Vale, &c.; and Mr. Ambler, with his Great Eastern, Gamester, Wood, Rose, &c., there were Messrs. Browell of Apperly, Lambert of Haydon Bridge, Dent of Neasham Neasham of Haughton, Wiley of Brandsby, Atkinson of Sedgefield, Lawson of Stapleton, Hawison of Newbiggen, Robin Thornton of Stapleton, Atkinson of Peepy, Best of Brafferton, Raine of Snow Hall, Jolly of Warlaby, Emmerson of Eryholme, Bulmer, of Aislaby, Greenwell of Archdeacon-Newton, and others—names as well known in the district for their choice cattle and clean farmsteads, as the former for taking the lead in stock-breeding, and whose specimens were the progeny of a by-no-means-desplicable ancestry, amongst them being Cœur de Lions,

Butterflies, Lord Bellevilles, Earl Stanhopes, Dukes, and Duchesses. Although in most instances the residents were beaten by the interlopers, with ther matchless animals, still, as just remarked, their stock was a pretty fair type of the real breed of Shorthorn, and furnished perhaps better evidence of its feeding-to-profit qualifications.

Sale of Shorthorns at Lancaster, England.

Messrs. Peel and Hopper united such portions of their herds as they wished to dispense of, and offered them by auction at Beaumont Grange, near Lancaster, the end of July.

Mr. Peel's catalogue comprised 29 cows and heifers and 5 bulls, which brought the total sum of £1,922 11s., being an average of £56 10s 10d. Lalage, a cow, was bought by Captain Oliver for 235 guineas, and Grateful went off for 105 guineas. Some of the animals obtained lower prices than their quality and breeding would justify. Mr. Hopper's animals consisted of 5 bulls, and 20 cows and heifers, which realized £784 7s.; being an average of £32 13s. 8d. The weather was unpropitious on the day of sale, or a larger sum would probably have been obtained.

County and Township Shows this Autumn.

West Durham Agricultural Society at Newcastle, Oct 4.

South Ontario Ag. Society at Whitby, Sept. 18 and 19.

Kingston Elec.Div.Society, Kingston, Sept.13.

Fullarton, Logan and Hilbert Society, at Mitchell, Oct. 2.

Russell Co. Society, at Smith's Hotel, Osgoode, Sept. 27.

Hay Township Society, at Rodgerville, Oct. 9.

South Wellington and Guelph Townships, at Guelph, October 10.

In the Counties of Lanark and Renfrew, at
Perth, first Tuesday in October.
Lanark, second Tuesday in October.
Smith's Falls, first Friday in October.
Ferguson's Falls, third Tuesday in October.
Carlton Place, first Tuesday in November.
Clayton, second Wednesday in November.
Packenham, second Thursday in October.
Franktown, second Tuesday in October.
Almonte, last Thursday in October.
Sand Point, first Tuesday in October.
Renfrew, second Tuesday in October.
Ross, fourth Tuesday in October.
Pembroke, third Wednesday in October.
Roseville, second Thursday in September.
Arnprior, first Thursday in October.

North Simcoe Society, at Barrie, Sept. 19.

Blenheim Township, Drumbo, Oct. 4.

Norwich Township, Norwichville, Thursday, Oct. 10.

North and South Wentworth and City of Hamilton, United Show at Hamilton, October 9 and 10.

West York and York Township, at Yorkville, October 22 and 23.

East York and Markham Township, at Unionville, Markham, Oct. 9.

Ancaster Township, at Ancaster, Oct. 3.

Peel County, at Brampton, 17 and 18 Sept.

City of Toronto Elec Div. Society, and Toronto Mechanics' Institute, Union Exhibition, commencing Oct. 7, and to continue for two weeks.

North Oxford and Ingersoll, at Ingersoll, October 9.

Eramosa Township, at Jones' Inn, Eramosa, October 8.

[Secretaries of Agricultural Societies will oblige us by informing us of the days on which their shows are to take place.—Eds.]

Baron Liebig on the Action of Peruvian Guano.

Munich, June 14, 1861.

There is a very prevalent opinion among agriculturists that guano produces a greater effect than an artificial mixture containing the same quantity of bone phosphate (3 Ca O, PO_5), and of nitrogen in the form of salts of ammonia. I have myself observed in experimenting on a piece of meadow lands that those portions on which guano was strewed became very soon conspicuous by darker green grass, whilst an artificial mixture, as above stated, appeared to exert scarcely any action.

This hitherto unexplained rapidity of action is due to the presence of oxalic acid in Peruvian guano.

When guano is extracted with water, a solution is obtained which contains about 2 per cent. of phosphoric acid, and 6 to 8 per cent. of oxalate of ammonia. If, however, guano be mixed with water, and the moistened mass be left standing for some days (just the state in which it would be in the soil), it is found on extracting with water from time to time a portion of the moistened mass that the amount of phosphoric acid has increased, and that of oxalic acid diminished. This reaction continues many days, the quantity of soluable phosphoric acid daily increasing in proportion to the diminution of oxalic acid, until at last the oxalic acid almost entirely disappears from the solution, and in its place is now found a corresponding amount of phosphoric acid. The idea immediately occurs that from the long contact with water the phosphate of lime and oxalate of lime and phosphate of ammonia.

But in a neutral solution of oxalate of ammonia, phosphate of lime is not decomposed, or at least only very slowly. There must, therefore be in guano some other substance which is the means of causing in the moist manure, the decomposition of the earthy phosphate. This substance is sulphate of ammonia, which is always present in Peruvian guano. In fact, on

adding a little sulphate of ammonia to a mixture in water of oxalate of ammonia and of freshly precipitated phosphate of lime, mutual decomposition of the last two salts took place in a few hours. The sulphate of ammonia renders the phosphate of lime somewhat soluble, and thus promotes its decomposition by the oxalate of ammonia.

The action of guano is therefore two-fold; depending, in the first place, on its soluble nitrogen compounds; and in the second, on its soluble phosphates. In this last respect its effect is similar to that of a superphosphate.

The foregoing decomposition in guano depends evidently to a greater or less extent on the wheather. Continued moderate moist weather. Continued moderate moist weather promotes the conversion of the insoluble phosphoric acid into a soluble form, whilst heavy falls of rain retard it, by washing out the oxalate of ammonia. Hence, from this dependance on time and moisture, we are not always certain of this manure in the soil.

I have discovered a very simple method of rendering the action of guano constant in connexion with the conversion of the phosphoric acid into a soluble form. It consists in moistening it a day or two before its application with a little water, to which a small quantity of oil of vitriol has been added, so as to render it distinctly acid. Under these circumstances decomposition takes place rapidly, and is completed in a few hours. The whole of the phosphoric acid, corresponding to the quantity of oxalic acid present, is separated from the lime, and rendered soluble by union with ammonia; and the oxalic acid disappears entirely as an insoluble oxalate of lime.

I am very anxious that agriculturists may be induced to make comparative experiments with guano alone, and after being moistened with dilute sulphuric acid.

I am, my dear Blyth,
Yours very truly,
JUSTUS VON LIEBIG.

Dr. Blyth, Queen's College, Cork.

Horticultural.

THE EGG PLANT.—(*Solanum Esculeutum.*) This vegetable has not yet attained the popularity it deserves. It is quite extensively grown by market gardeners, near cities, but we have seldom seen it on the farmer's table. Some have not yet learned to like it, more's the pity, for one accustomed to the taste, finds it, if well cooked, almost equivalent to both meat and vegetables. The plant is of African origin, and of too tender breed to be grown in open ground from the seed at the far North; but by starting in the hot-bed, or in pots in the house, six or eight weeks before corn-planting time, it can be transplanted in June, and brought to maturity.

In that latitude there is a chance that plants may be grown to bear from seed, sown even as late as June 1st. We have generally fonnd it most convenient to obtain a dozen or two plants from those who grow them for sale.

The Egg Plant needs a very rich soil, with warm exposure. Fork into the ground devoted to it, a liberal supply of horse manure, and set the young plants, three feet by two apart. Hoe trequently throughout the season, and hill up freually till the blossoms appear.

Under good treatment the fruit will grow to the rize of a large muskmelon. When it has attained the size of a goose egg, it is ready for cooking, and continues good until its deep purple color changes, and the seed turns brown.—They are cooked in various ways. Usually, slices one-fourth to one-half an inch thick are fried in butter or lard.—*American Agriculturist.*

The Dairy.

THE DEPTH FOR SETTING MILK.—A correspondent of the Homestead relates the following experiment:—"On the 8th of April we set two pans of milk, weighing forty-seven pounds two ounces, in two tin pails ten inches deep. The next day we set the same quantity of milk from the same cows two inches deep in pans. These were placed on the same shelf with the first, and of course in the same temperature, which was near 50 degrees. In four days the first milk was sour and skimmed, yielding three pounds two ounces of cream, which, being allowed to stand one day, made one pound eight ounces of butter. The other milk, standing the same length of time, yielded four pounds eight ounces of cream, making two pounds one ounce of butter—a difference of nine ounces in favor of setting the milk shallow. This is a gain of 37½ per cent. over the depth of ten inches."

From the Boston Cultivator.

Washington Butter.

Messrs. Editors:—In the Cultivator of May 11th, I noticed an article on washing butter. It is true that water is injurious to butter that is to be kept any length of time; and I here briefly state my mode of preparing butter for winter. I wash it in *sweet* skim milk, then salt it and let it stand until sufficiently cool to work into lumps, then pack it. This has been my invariable rule, for more than thirty years, and I have never been troubled with rancid butter in the spring. S. W.

TO KEEP BUTTER SWEET.—E. E. Smith contributes to the *American Agriculturist* the following directions for preserving butter in

good condition for any length of time:—"In May or June when butter is plenty, work it thoroughly two or three times, and add at the last working nearly one grain of saltpeter and a table-spoonful of pulverized loaf sugar to each pound of butter. Pack it tightly in stone jars to within two inches of the top, and fill the remaining space with strong brine. Cover the jars tightly, and bury them in the cellar bottom, where the butter will keep unhurt for a long time.

The Duke of Athol's Dairy Farm.

When lately making an excursion to the north, I found myself at Dunkeld. I was surprised and astonished, at falling in with the finest herd of Ayrshire cows I have ever seen They are the first-prize cattle of every distinguished ring. I recognized former winners at the Glasgow shows at the Ayr shows, at the East Kilbride shows, at the Highland Society shows. It was a pretty sight, twenty-eight such cows, in a row, assorted in size and color. I looked on at the milking, which was done by three dairy-maids from Ayrshire; but, before a pap was pressed, the girls washed and dried their hands, there being a basin of water and towel for each, and a like ablution was performed between the milkings of cow after cow. The milking went on, and, as pail after pail was filled, it was emptied into a large tin can, which was then hung to a suspended little weighing machine; and according as the contents proved more or less than 30 lbs. (the weight of three gallons,) milk was taken out or added, and each weight of 30 lbs. was marked by the milkmaid on a slate hanging beside the weighing-machiner As soon as two cans were ready, a man carried them off to the milk-house, which was presided over by a Renfrewshire woman, and he returned with them empty; and so kept going and coming till the milking was over. I should mention that each dairymaid has a weighing-machine and slate, along with the basin of water and towel, placed against the wall, behind the middle of the set of cows assigned to her, and that morning and evening, for the week through, the number of marks on each slate, with the number of pounds less than 30 lbs. stated in figures, show the weight of milk drawn by the dairywomen.

The Byre is not a modern show thing—a would-be palace for animals. It is characterised by airiness, proper temperature, and cleanliness. Five of M'Kinnel's ventilators pour in the pure air and suck away the foul. The walls are pannelled all aronnd, some four feet from the bottom. Each stall holds two cows, and the stalls are divided by low wooden partitions, like small stable trevises, so that the cows do not grind and injure their horns as where stone is used.—There is a strap of wood, half way between the pannelling in face of the cows and the ceiling, and on this strap is fixed the name, well printed, of each cow above where she stands, so that a person unaccustomed to cows might think that they went correctly to their places from seeing their names. Each cow has a fixed square feeding trough formed of slates, and between the two feeding troughs is a similar drinking trough for both cows. The floor is of Arbroath pavement, which is covered with soft matting on two-thirds forward of the space where the cows stand or lie. The grips, in their whole length, are of perforated iron, so that all liquid drains off at once to the tank. At each end of the byre is a water tank near the ceiling, to supply water for the drinking troughs by a direct communication with each, and also to enable the floor to be flushed, and made thoroughly clean and sweet. Connected with the byre are places for holding, hay, straw, roots, meals, and cakes, and also the apparatus for crunching, steaming, and otherwise preparing the food, through which and the byre, from end to end, is a continuous railway for conveying the cattle food. All the wood-work is painted with a mixture of asphalte and linseed oil, giving it a fine glossy look, and showing distinctly the natural markings of the wood. The dairymaids wear shoes and stockings, in deference, as I heard, to the sneers of the Northerners who are altogether unlearned in the mysteries of dairymaid costume—and that "when the kye comes hame" a portion of the beanmeal is put into every feeding trough, that each cow when being milked, may enjoy the luxury of receiving while she is so bountifully giving.

The Milk House.—Everything the neatest, the cleanest, and the most convenient. What butter is made is from cream, none from the whole milk, and cheese is made from some of the skim milk. Accurate weighing again—three grllons and three quarts produce a quart of cream, which yield one pound of butter. But it does not follow that it takes so much milk, when churned whole, to give a pound.

It is one of the duties of the dairymaid in chief, she of the milk-house, to fill up a printed weekly schedule of milk received and how disposed of, for there is not a drop of milk or ounce of butter, or pound of cheese, whether used by the family or sold, which is not accounted for; and from these schedules, which are themselves preserved, entries are then made in a book which are themselves preserved, entries are made in a book which has its place in the library, and can be referred to at any time as the Dairy Book of the year. I was told by one of the citizens of Dunkeld, that the comfort of the inhabitants is greatly promoted by the Duke's dairy. Formerly milk was so scarce that beer had to be taken with porridge. But now, thanks to the Duke of Athole, there is abundnnce of sweet milk, skim milk, and butter at unvarying prices throughout the year, viz.: 8d per gallon for sweet milk, 2d for skim, and 14d per lb. for butter, and any traveller to or from the North can satisfy himself of the excellent quality of the butter by tasting it at the railway station at Perth.—*Glasgow Morning Journal.*

The Apiary.

THE APIARY.—The American *Bee Journal* states that the nectar of flowers, as gathered by bees, is a watery solution of cane sugar. In the process of this transformation, the cane sugar is decomposed into three different kinds, which constitute honey. The heat which the bees maintain in the hive causes this change; weak acids, as well as heat and moisture, can effect a similar conversion of cane sugar.

FERTILITY OF THE QUEEN BEE.—The American *Bee Journal*, in an article on the Queen Bee, thus treats of the fertility of this insect:—

It is an interesting question, how many eggs a queen may lay in a given time, under favorable circumstances. Dzierzon estimates the number of eggs layed by a vigorous queen, during the swarming season, at three thousand per day, if the colony be populous enough to cover the combs properly. This is certainly not incredible, as queens have been known to lay from 200 to 300 in an hour. Kirsten limits the number at two hundred per day, at the most favorable season. But, as eggs are hatched and the brood fully matured in twenty one days, if this were correct, there could never be more than 4200 cells occupied by the eggs aud brood. These could be amply accommodated in a single comb, nine inches square | whereas we not unfrequently find a dozen such combs in a hive filled with brood at one and the same time. On the whole we may confidently assume that a vigorous queen may aunually lay from 250,000 to 300,000 eggs, or at least 1,000,000 in the four years which constitutes the average duration of a queen's life. Many of these eggs, indeed, may not be hatched or become fully developed, as the workers are apt to destroy brood, especially when pasturage fails, or the weather proves unfavorable.

Domestic.

CURRANT WINE.—The Germantown *Telegraph* gives the following directions in regard to making currant wine:—

The currants should be fully ripe when picked; put them into a large tub, in which they may remain a day or two; then crush them with the hands, unless you have a small patent cider-press, in which they should not be pressed too much, or the stems will be bruised and impart a disagreeable taste to the juice. If the hands are used, put the crushed fruit, after the juice has been poured off, in a cloth or sack and press out the remaining juice. Put the juice back in the tub after cleansing it, where it should remain three days, until the first stages of fermentation are over, and removing once or twice a day the scum copiously arising to the top. Then put the juice into a vessel—a demijohn, keg or barrel—of a size to suit the quantity to be made, and to each quart of juice, add three pounds of the best refined sugar, and water sufficient to make a gallon.

Thus, ten quarts of j ice and thirty pounds of sugar, will give you ten gallons of wine, and so on in that proportion. Those who do not like it very sweet can reduce the quantity of sugar to 2½ or 2 lbs. per gallon.

The cask must be full, and the bung or stopper left off until fermentation ceases, which will be in twelve or fifteen days. Meantime the cask must be filled up daily with water, as fermenta- throws out the impure matter. When fermentation ceases, rack the wine off carefully, either from the spigoe or by a syphon, and keep it running all the time. Cleanse the cask thoroughly with boiling water, then return the wine, bung up tightly, and let stand for four or five months, when it will be fit to drink, and can be bottled if desired.

The Poultry Yard.

To Keep Fowls Free from Vermin.

The *London Field* has an article on this subject from the pen of John Douglas, professional breeder, from which we make the following brief extract.

"There are several kinds that infest the hen. By attending to the following remedy, they will be entirely kept clear. First of all, if in confinement in the dust corner of a poultry house, mix about half a pound of black sulphur among the sand and lime that they dust in. This will both keep them free from parasites, and give the feathers a glossy appearance. If infested with the insects, damp the skin under the feathers with a little water, then sprinkle a little black sulphur on the skin. Let a bird be covered with the insects, and they will disappear in the course of twelve hours. Also, previous to setting a hen, if the nest be slightly sprinkled with the sulphur, there is no fear of the hen being annoyed during incubation, neither will the chickens be annoyed by them. Many a fine hatched brood pines away and dies through nothing else, and no one knows the cause. Having had an ostrich under my care that was pining, I looked into his feathers and observed thousands of the parasites. I employed tobacco-water, also lime-water, under my then master's orders, to no effect. In his absence, I well damped him, and sprinkled him under the feathers with black sulphur, when next day they were examined with a microscope, and every one was dead. Having had some macaws, also parrots that were addicted to biting off their feathers, I employed the black sulphur by well syringing them with water, then sprinkling the sulphur over their skins. If tame, sponge the skins, then rub gently with the points of the fingers, with the sulphur, every

other day, for about a fortnight, when the parrot or macaw will cease to destroy his plumage. It is not a remedy which has not been proved, for I have used it these two years with success."

Productiveness of Fowls.

Experiments to ascertain the comparative productiveness of the different breeds of poultry, have been made this spring in the Zoological Gardens of the Bois de Boulogne. The number of eggs laid by the fowls in that establishment has been immense. It appears that the Asiatic breeds of Nankin and Brahmapootra are the best layers; the French *Crevecœrs* come next; the Houdans third; the La Fleche fourth; and after them the Dorkings and a Dutch breed.—The Nankins and Brahmapootras are also remarkably precocious; and according to some breeders they begin laying in February, and keep on almost to the end of the year.

Hen Wisdom.

It is a pleasant recreation to tend and feed a bevy of laying hens. They may be trained to follow the children—and will lay in a box. Egg shells contain lime, and in the winter when the earth is bound with frosts or covered with snow, if lime is not provided they will not lay—or if they do lay the eggs will, of necessity, be without shells. Old rubbish lime from chimnies and buildings is proper, and only needs to be broken for them. They will often attempt to swallow peices as large as a walnut. I have often heard it said buckwheat is the best food for hens; but I doubt it. They will sing over Indian corn with more animation than any other grain. The singing hen will certainly lay eggs, if she finds all thiugs agreeable to her; but the hen is such a prude, as watchful as a weasel, and as fastidious as a hypocrite—she must, she will have secresy and mystery about her nest—all eyes but her own must be averted—follow her, or watch her, and she will forsake her nest and stop laying. She is best pleased with a box, covered at the top, with a backside aperture for light, and a side door by which she can escape unseen.—A farmer may keep one hundred hens in his barn, and allow them free liberty to trample over his hay mow, and set where they please, and lay if they please—and get fewer eggs than one who has a department especially for his fowls, and keeps but half as many, and furnishes them with corn, lime, water, and gravel; and who takes care that his hens are uot disturbed about their nests. Three chalk eggs in a nest are better than a single egg. Large eggs please them. Pullets will commence laying earlier in life when nests and eggs are plenty, and other hens are cackling around them.

A dozen fowls shut up, away from the means of obtaining other food, will require something more than a quart of Indian corn a day. I think fifteen bushels a year a fair provision for them; but more or less, let them always have enough by them—and after they have become habituated to finding enough at all times, they take but a few kernels at a time, except just before retiring to roost, when they will fill their crops. But just so sure as their provision comes to them scantily, so surely will they raven and gorge themselves to the last extremity, and will stop laying. One dozen fowls, properly tended, will furnish a family with more than 2,000 eggs per year, and 100 full grown chickens. The expense of feeding the dozen fowls will not amount to eighteen bushels of Indian corn. They may be kept as well in cities as in the country, and will do as well shut up the year round as to run at large—and a grated room well lighted, ten by five feet, or larger if you can afford the space, partitioned off from the stable or other outhouse, may be used as a hen house. In the spring, (the proper season) five or six hens will hatch at the same time, and the fifty or sixty chickens given to one hen. Two hens will take good care of one hundred chickens, until they are able to climb their little stick roosts. They should then be separated from the hens entirely. They will wander less, and and do better, away from the parent fowls. Chickens put in the garden will eat up the May bugs and other destructive insects; but for my own part I much prefer four or five good sized toads; for they are not particular about their food, but will snap up ants, and bugs of any kind, and will not, if a good chance offers, refuse the honey bees, but will down them in a hurry. In case of confining fowls in summer, it should be remembered that a ground floor is highly necessary, where they can wallow in the dirt, for they like it as well as the hog likes muck.—*Cor. N. H. Journal of Agriculture.*

Transactions.

Report on the County of Bruce.

(*Continued from page* 509.)

The next article purchased on credit was the fanning mill, one of which every man that had a bushel of wheat sown considered himself in the greatest need. Now although a fanning mill is very handy and useful, when you have plenty for it to do, to get one before you have 20 bushels of wheat or a barn to put either the wheat or the mill in, is an unprofitable speculation.

I have seen an article called a "hand-fan," made in a semi-circular shape. A hoop, like the rim of a large sieve, cut in two halves, and a light solid bottom nailed into it with small tough nails, a handle on the end of the

hoop at each side, and the machine is finished. An active man can clean a hundred bushels a day with it, and clean it better than with many mills.

This article is of French origin. The French make as good settlers as any we have in this county. They are contented with little and keep out of debt. It is true their notions of agriculture are rather primitive; manuring they never think of; but then, no wonder—they don't read, nor do they see any manuring done around them; they clean their land off well, make large clearances; what they can make themselves they will not buy, and what they buy they pay for. If the majority of their British neighbours would do the same there would be less complaint of hard times, bad crops, and bad government.

Fruit trees are the next in the list of evils that this country was cursed with. They were pressed upon the people with every promise of indulgence; but the moment the nurserymen got the notes they were transferred to another, clapped into the Division Court the instant they were due, and some of them before it, entered in the procedure book before half the people knew where to go to look for them. But even this was not the worst. Another gentleman, in shape of an agent came from a certain part of Canada, with the astounding information that all the other fellows' trees, being from the States, would do no good in these "hyperborean" regions, but he could furnish them some genuine natives that would do them some good. Accordingly he got orders for two or three thousand dollars' worth, and went to whence he came from. The trees were sent part of the way in the fall, or very early in the spring, I don't know which, tied up in a manner that showed the artist cared very little what became of them. About a month after the time appointed for their delivery they arrived, and in a far drier state than any brush the purchasers had in their fallows. The major part of them took the trees, just to try if they would grow, which they did not, nor did the parties ever expect they would have to pay for them; but, alas for all human calculations, the summonses were received in due time, and that to a foreign court. "This was the unkindest cut of all;" it would not do to go 100 miles to defend a suit of from four to ten dollars, as the contract was made in the County of Bruce, and the notes being drawn there they thought they would have been sued there, but it was fated otherwise. At length one of the victims offered to go if the others would pay his expenses, which they agreed to do. But when the fatal day came for the trial, the respectable gentleman that acted as agent for the nursery, turned about and swore he was agent for the people, and had bought the trees from the nursery for the Bruce people, instead of selling them to them. Every cent of the money was collected, and some people lost their last cow. This transaction cost the County of Bruce not less than four thousand dollars. Although the first lot of trees were good, seven eighths of the parties had no place properly fenced, nor the ground prepared for them; the consequence was that they were either eaten off by the cattle, or dried out from want of moisture.

The next item, furniture, is the most excusable of all, yet if the purchasers had waited until they could have paid the cash, they would have got it much cheaper.

Now that I have explained in the best manner I am able the cause of the distress in the County of Bruce, viz: the credit system, allow me to explain the agent in connection with it, viz: the Division Courts. There are four in the County, held three times a year, and I am sure I am below the mark when I say that the number of cases average 500, each court since the year 1850.

A certain politician said there never was an act of Parliament, but that he could drive a coach and six horses through it; but were he alive and in the county of Bruce now, he might drive a troop of elephants through the Division Court act, for it is quite certain that if the land did not belong to the government one half of it would soon be in the hands of creditors, speculators, Division Court clerks and lawyers. As it is it can never be paid for under present circumstances. A suit of $40 takes all a man has; say a yoke of oxen and two cows. Crops, such as hay or grain, never bring anything, on account of the impossibility of removal, for want of good roads; and in a suit of the above amount the costs soon rise to $10 or $12—the cattle will not pay more than the debt, the balance hangs over the debtor, accumulating costs and interest, which he never can pay until he sells the land and goes to the States, and Britain loses another subject. The Division Court act at the present time is the most abused law on the Canadian statute book; it is the sheet anchor of all tinkers, pedlars, pettifog-

gers, and speculators of all descriptions; it is entirely on one side, and gives no chance at all for the poor wretches entangled in its meshes. I shall relate two instances that came under my own observation before I point out the clauses in the act that are so open to abuse.

The first is a young man who had settled in one of our new townships. Being early in, he had his choice of the land in quantity and quality; he took up two hundred acres, according to custom, in a certain township. He sold his right of one and got some money down, with a promise of the rest in yearly payments. This induced him to go in debt for certain articles he wanted; but it turned out that the purchaser was not able to fulfill his agreement, and as he had possession of the land, the seller was obliged to borrow what he had paid him on it, and give it to him and resume possession of his land again. The Indian peninsula coming into the market at this time, together with low prices, and light crops, there was no demand for lands in the County of Bruce. Perhaps the exceedingly high prices holders had been asking previously had something to do with it as well as the opening up of new settlements in other parts. However, he was sued, and in the spring of 1858, after putting in some little crop, he left home to look for work, in order to earn something to pay off these debts; he travelled for three weeks, until he had spent the few dollars he took with him for his expenses, and then had to return and beg his way home. In due time the execution came, and as I happened to be in the house or shanty at the time the bailiff came, I shall never forget the scene the longest day of my life.

The defendant in the case (as the legal document said), was a strong powerful man, about 25 years of age. I never beheld a man in such agony, in trying to suppress his emotion, although the tears fell like rain. Creeping about the floor was a stout child about 3 years old, another about 18 months was lying in a little cradle, a death-like paleness overspread its face, its lips were shrunk and parched-looking, and its eyes deeply sunk in their sockets; the wife was in the bed in one corner of the room, after being confined the night before; what her feelings were on hearing the dreadful news God only knows, for me; I thought it would have been the cause of her death. And what, will you say, is the cause of this emotion? One little cow, their only hope for existence, was seized under this execution, and was to be sold on this day. What made their grief more poignant, if possible, was that the wife had earned the cow before she was married. This cow, or properly speaking, the milk of her was all that these five individuals had to subsist on, together with about half as much bran and shorts, and a little flour, as would last from May until the new food came in. This man had between 30 and 40 acres cleared, and could have paid his debt with ease in two years, had it not been for the cruel machinery of the law. The cow was taken and sold for $5, and this did not pay the bailiff's fees; she was worth $20 at a fair valuation.

This case is sufficient to illustrate the working of the system of itself, but I shall give another.

A respectable tradesman, with about $800 in money, thought he would try his luck in Canada. Having heard of one of those splendid investments" that were everywhere to be seen on paper about four or five years ago, he made his way to this county, and then to this flourishing village, which bore the name of the one he left. He was very soon offered a splendid chance for his spare cash, which he unfortunately embraced, for before the end of two years the partners in the concern were no where to be found, and he was left to manage the whole concern, which consisted in paying what debts were contracted. The first, however, that he was pressed for was one of his own for a stove. When he was sued he started off to try to earn the money at his trade. He had paid one half, and was working away for the other, when the bailiff came and seized the stove, the only article he thought worth removing in the house. The poor woman, who happened to be one of that proud nation whose boast it is that every man's house is his castle, and not thinking that such an advantage would be taken of her in her husband's absence, was nearly paralyzed. She begged time until she could write to her husband, but the bailiff could grant her no more time than the execution allowed. The stove was duly advertised to be sold on a certain Monday in January, which turned out to be the coldest day in that cold winter, either before or after. The dreadful day arrived, so did the detested official, but neither letter nor money from her husband. The rest is soon told, but tell it not in the South-

ern States, publish it not in Delhi, that the bread was taken out of the oven, and the fire thrown out of doors, the stove taken and sold for $4½, that cost $40, with $25 paid on it, which was the full value of the article, leaving a delicate woman with two helpless children, in a cold house, on the bleak and stormy shores of Lake Huron, on one of the most inclement days of mid-winter. For a short time she kept herself from freezing by burning a few chips in an old pot, and then her husband arrived, and procured the loan of a stove, as there would be no use in his buying one, for it would not be well set when it would be removed by the same process. If these two cases are not a sufficient answer to those parties who are surprised at the emigration going westward, I am afraid they will be a long time in ignorance of the cause. Many have left already, and many more are waiting for the means to take them away.

I have no doubt many will say, "Can such things be in such a country as Canada, and with such a government as she possesses?

Verily such is the case, and from the very reason that that same government knows nothing about the working of the Act. They get as much out of the fee fund as pays the Judge's salary, and from that they think the country is no loser by the institution. The plaintiff's are the only parties that can throw any light on the subject, but they are too much interested; and although they do not like the working of it, they dare not complain, for if there is any change at all made for the benefit of the miserable debtor, they think it is so much to their injury.

But the poor hungry, naked, careworn, illiterate debtor can do nothing. The first thing would be to employ a lawyer, and that is entirely out of his power. A lawyer's fee would provide him with luxuries that his family has not enjoyed for many a day. And if he did get legal advice all the satisfaction he would have would be that it was law, and that he should submit.

Now and then an editor will come out with a complaint about it, when the shoe pinches himself, but after the pain ceases he troubles himself no further. Other leading papers seem to be rather jealous of the princely fortunes that clerks and bailiffs are making, but never make the slightest allusion to the poor wretches whose sweat and tears rot and rust the bills and coin that they are gloating over or wasting in luxurious indolence that would shame the highest in the land to indulge in.

There is another class and it is well for the county that there is, who keep clear of both debt and credit, and of course they do not interfere; they neither fear the one nor feel for the other. But as the individual who has moral courage enough to commit his thoughts to paper without fear of receiving any punishment more than contempt, I shall here expose the different clauses in the Division Court Act that are most abused.

The County of Bruce was for many years with only one Division Court, when some parties were brought 60 miles to it, and I have known one bailiff make a return of 50 miles when the defendant did not live more than 20 from the office. It is true that had the complaint been made to the Judge he would not have allowed it, but it would have cost the person more than the difference to get redress, and this is the way thousands of dollars are taken from poor people by these officers.

By the Act 13 and 14 Victoria Cap. 53, Section 14th, "The fees upon every proceeding shall be paid in the first instance by the Plaintiff or Defendant, on or before such proceedings, and the Bailiff's fees upon Executions shall be paid to the Clerk of the Court at the time of the issue of the Execution, and not before."

If this rule were adhered to, it would save at least one half of the sueing. Many sue for 50 cents when they can get it done without paying costs down; no one will pay $4 or $5 on a suit of such an amount, and be sure they would have to lie out of their money for three months at the least.

One case of this kind came under my notice. A poor man who had very little knowledge of the English language, and did not enjoy very good health, was sued by a blacksmith for 50 cents. There being many of the same name in the locality it happened to be served on the wrong person by the deputy bailiff. He swore he had served it on the right man and got judgment. By the time the execution was out he found out what he had been at, so he took the execution to the real debtor, and seized a heifer, put her up at a tavern, ran expenses to $8 and sold her for it. Had this plaintiff been made to comply with the law that poor man would have been saved all the trouble and expense. So much for the small sums. Now for the large ones. A stove peddler sells about 200 in one divis-

ion, if one does not two or three peddlers will, and it is all the same in the end; the price is on an average $40 each, with two years credit. He has over the half of these to sue for, which is one hundred suits of $20 each. The costs upon each of these would be about $3,50, which would be about $350, which the peddler would be very slow to pay himself, when he would consider that there was a great number of the creditors not worth anything. But then these costs only get judgments; there is another $3,50 wanting for executions. Now I want to know would any man of business pay seven hundred dollars out of his pocket when his chances of getting one dollar more back in six months was of the slenderest kind. But he need not put himself to any uneasiness about it, the clerk knows him, he is a good customer, and he takes them in with a mere trifle, there are no formalities wanted, all straightforward work, judgment in thirty days, &c, the whole bunch of executions made out at once and thrown to the bailiff. Now here is the most horrible part of the whole concern. A bailiff cannot make more than 15 sales in a month and do his utmost, and in a division where there are three townships a clerk could give a bailiff five executions that he could not satisfy in a month, if he seized property under them all. If he stop to take bonds it is tedious, if he drives away the stock it is expensive, and if it is hay or grain he cannot sell it unless some person buys it in for a mere trifle, and then it will be seized again by some other bailiff, and this leads to further litigation in the shape of interpleaders, which will raise the costs still higher, on the plaintiff first, and on the poor defendant at last. The executions must be renewed every month, which brings more grist to the clerk's mill. At the rate of fifteen a month it will take the bailiff seven months to get through a hundred, and by this time he will be considerably in debt, for executions do not pay at the best of times in this back country, where roads are not first rate. During his absence the clerk has it in his power to give the service of the summons to every understrapper he thinks proper, and the consequence is that the bailiff is ruined in one year, or two at the furthest.

In the meantime the peddler comes along expecting to get $1000, but if he gets $200 he may consider himself well off; this he is told is not all owing to him, but the clerk lets him have it to oblige him. Mr. Peddler is very angry, certainly, but what can he do? He has broken the law, that is, the clerk has done so to oblige him, and now he is not satisfied. He has given the clerk orders to push every thing on as fast as he could, and the clerk has done so, but then he had no idea that it was going to cost so much, nor did he care, if the clerk would only wait and get it out of the defendants. But the latter takes all the fees out of the first money that comes in. If the plaintiff threatens to make a complaint the clerk asks him quietly what fees he paid before hand, and on what suits? This settles the matter, and the work of spoliation goes on until the court becomes as bad as any inquisition that ever was in existence.

Then there are a hundred other ways that the clerk can adopt to make money, by purchasing notes at half their value, and sueing them in the maker's name, &c. They can buy judgments, and on all these multiply expense to a horrible degree, forcing them on the Bailiff faster than he can attend to them. There is no clause limiting the number of executions a Bailiff is obliged to satisfy in a given time, and yet it could be easily done if the Plaintiff's were compelled to have their suits in court one month before the last day of service, and no personal service required. Then a Bailiff could work his executions in with the services, or where the court is held every two months one month should be devoted to services and the other to executions; but heaven forbid that there should be any necessity for either, for it is the most cruel farce, and greatest mockery of justice that ever cursed a magnificent country with civilized inhabitants. * * * *

Every man that lands in Canada and intends to become a British subject should be allowed at least five acres of land, one cow, necessary clothing and furniture, and a year's provisions, which should be free from all debts, dues and demands. The idea of ruining a man first, and then expecting him to pay his debts afterwards is preposterous. A very little shift in the machinery of the law makes an honest man a rogue, but all the law that ever was enacted would not make a rogue honest. The demoralizing effects of making over property to children, and then the purjury that ensues in order to preserve the means of supporting life, is enough to condemn the system although there was no other cause.

Finally, all that I have to say is, that no

tongue can describe or heart conceive, nor imagination picture, the miseries that the working of the Division Court system has entailed on the unfortunate settlers in the County of Bruce.

In enumerating the tradesmen that are subjected to the annoyances of the Division Court, I forgot to mention some of the professional gentlemen, that don't get quite clear of it either, and these are the doctors. Now and then one or two of these gentry happens to come into these rising villages, which, thank providence, are not in much need of doctors, only for fashion sake. Broken limbs now and again, and ladies under certain circumstances which lead to the increase of the population, are the principal occasions for which their assistance is required. Gentlemen of this description when first setting out in life are not overburthened with cash, and if they have any they are very bad economists. Let their practice be what it will the pay is very uncertain, for where people in their health and strength are hard set enough to live, how can it be with those that have it not.

But these persons will get credit, not on their own responsibility, but because their fathers are rich men, and won't see them go to jail, or their things sold, but sometimes all parties are disappointed. I have seen every article the doctor possessed exposed, even his wearing apparel, his anatomical maps or plates, and instruments of the most particular nature. Surely a surgeon's instruments ought to be exempt frem seizure, when there is only one of the profession in the county.

THE SCHOOL SYSTEM.

There is one thing lacking in the school system, and how it could escape the notice of all the authotities, from the framer of the Bill down to the humblest teacher, I don't know, and that is proper accomodation for the teacher. To every school site there should be a site for a house for the teacher, with at least one acre of ground, which should be furnished with plain necessary furniture, such as bedstead, chairs, tables, and cupboards. The land should be cultivated after the most approved manner. After it was put in working order it would be the most beautiful relaxation from the monotonous drudgery of teaching to keep it weeded and attend to it that a person can enjoy. The produce of the ground would support the teacher and his family in the first place, and in the next he could, would, and should, teach the principles of agriculture. Every teacher should be as well posted in agriculture, grain growing, green crops, as arithmetic, grammar, and geography. Every boy of fifteen years of age (and I am not certa if the same knowledge would injure the girl should be able to describe every kind of grain in the country, every kind of manure requisite for the soil, every kind of grain, root and vegetable that is required for the use of mankind. The teacher could on his own ground give practical demonstrations to the pupils, and they should be encouraged to produce these things in their gardens, and be allowed to exhibit them yearly at the school and receive small prizes. The expenses would be but little, and the benefit would be beyond all calculation.

The present system is little better than none at all. The teachers are young men that take to it in preference to agriculture, the rate-payers through motives of economy get third class male-teachers or females that are but ill qualified either to restrain or instruct the wild young boys that attend. A teacher boarding in a farmer's house can have no comfort in comparison to what he would have in his own, marry he dare not, for if he has a school this year he may not have one next. The whim or spleen of any vulgar churl that may be appointed trustee, on account of his opposition to high salaries, may work so much to his disadvantage that he will be obliged to leave, no matter how well qualified he is. Changing teachers so often is the most injurious practice in the institution. By providing a home of this kind for the teacher they could obtain a first class one for $200 a year, of which he would not need more than would provide him clothing and a little flour. If a teacher is worthy of the office the longer he is in one place the better, not less than three years at anyrate. But one thing is certain, if agriculture is not taught in our schools we shall never have it in general perfection on our farms.

Miscellaneous.

FORESTS—INFLUENCE ON CLIMATE.—That a *tree* should ever need an advocate, is strange enough. It can assert priority of claim,—'the right of possession,"—it was here before the white man,—before the Indian even! It is about as handsome as any man, full as honest, and sometimes a good deal more useful. It is the most perfect specimen of architecture that human eyes ever looked upon. If a tree must be felled,

—if what no man could create, must yield its beautiful form, and its valued life to man's necessities, let the sacrifice be made with sorrow and regret,—let the woodman spare the tree if he can. I adduce valuable testimoney to the importance of forests, as follows:

Extract from the Report of the Secretary of the Bombay Geographical Society for 1850.

It was early remarked by Humboldt, that men in every climate, by felling the trees that cover the tops and sides of mountains, prepare at once two calamities for future generations —the want of fuel and a scarcity of water Trees, by the nature of their perspiration, and the radiation from their leaves in a sky without clouds, surround themselves with an atmosphere constantly cold and misty. They affect the copiousness of springs, not, as was long believed, by a peculiar attraction for the vapors diffused through the air, but because, by sheltering the soil from the direct action of the sun, they diminish the evaporation of the water produced by rain.

When forests are destroyed with an imprudent precipitation, as they are everywhere in America, the springs entirely dry up or become less abundant. The beds of the rivers, remaining dry during a part of the year, are converted into torrents whenever great rains fall on the heights. The sward and the moss disappearing with the brushwood from the sides of the mountains, the waters falling in rain are no longer impeded in their course ; and, instead of slowly augmenting the bed of the rivers by progressive filtration, they furrow, during heavy showers, the sides of the hills, bear down the loosened soil, and form those sudden inundations that devastate the country. Hence it results that the destruction of forests, the want of permanent springs, and the existence of torrents, are three phenomena closely connected together.

In India their effects are very appreciable. At Dapoolie the climate is much more hot and dry than formerly; streams now dry up in December which used to flow until April or May. This is attributed to the destruction of forests which formerly covered the neighboring hills, now barren and desolate. In southern Coucan, within the space of fifteen years, the climate has been greatly deteriorated by the diminution of vegetation, and consequently of rain. The people of Pinang have memorialized government against the destruction of their forests, feeling sure that the result, by its continuance, will be the ruin of their climate. The dreadful drouths which now so frequently visit the Cape de Verd Islands are avowedly due to the removal of their forrests; and in the high lands of Greece, where trees have been cut down, springs have disappeared. In India, a few years since, a proprietor, in laying down some grounds, well watered by an excellent spring, for a coffee garden, at Genmore, despite the advice of the natives, *cleared the adjacent ground*, when the supply of water vanished. Cases are also cited, where the clearing of jungles was followed in every case by an almost immediate diminution of water; when the jungle was allowed to grow again, the water returned; the springs were opened, and flowed as formerly. The St. Helena Almanac for 1848, gives particulars of the increase of the fall of rain for the last few years attributable to the increase of wood; within the present century the fall has nearly doubled. The plantations seem to have performed another service to the island. Formerly, heavy floods, caused by sudden torrents of rain, were almost periodical, and frequently very destructive; for the last nine years they have been unknown.

Jochim Frederic Schouw, Professor of Botany at Copenhagen, speaks as follows of the influence of forests upon atmosphere:—'We find the most evident signs of it in the torrid zond. The forests increase the rain and moisture, and produce springs and running streams. Tracts destitute of woods become very strongly heated, the air above then ascends perpendicularly, and thus prevents the clouds from sinking, and the constant winds(trade winds or monsoons,)where they can blow uninterruptedly over large surfaces, do not allow the transition of vapors into the form of drops. In the forests, on the contrary, the clothed soil does not become so heated, and, besides, the evaporation from the trees favours cooling; therefore when the currents of air loaded with vapor reach the forests, they meet with that which condenses them and changes them into rain. Since, morever, the evaporation of the earth goes on more slowly beneath the trees, and since these also evaporate very copiously in a hot climate, the atmosphere in these forests has a high degree of humidity, this great humidity at the same time producing many springs and streams."

Testimony of this kind could be acumulated, and I hope that the reading public will give the matter serious thought.—H. T. B.—*Rural New Yorker.*

Great Destruction of Sheep by a Bear.—The Ottawa *Citizen* is responsible for the following:—

For a few years back a bear has infested the farms in the 5nd Concession South March, County of Carleton, and has destroyed much stock—calves, sheep and pigs. This spring he has been very destructive, killing and injuring on four farms convenient to each other, 35 sheep and a large hog. On the night of the 2nd of May he visited the farm of Mr. Wm. McLaughlan, and tore open a strong stable door where Mr. McL. had his sheep and a span of horses enclosed for safety; he injured five of the sheep badly and carried off one. The next day Mr. McLaughlin set a gun in the bush where the bear had left a part of the sheep he had carried off. In a few hours afterwards a report of a gun was heard, when four

men started off in pursuit of bruin with axes. They soon came in view of his bearship, who showed not the least sign of fear, and proved to be an enormous large male, weighing nearly 400 lbs. After a little time the bear started off at a brisk pace, and an animated chase ensued, which lasted an hour and a half, when suddenly in a very thick part of the bush, he stood at bay, with every demonstration of anger. The men now closed on him, when one of them very skilfully gave him a heavy blow of an axe on the head, which so stunned him that he was easily despatched. The inhabitants are quite rejoiced at his being killed.

Great credit is due to Mr. McLaughlin for his zeal and well directed efforts to destroy such bold and crafty mauraders, which are at once the plague and terror of the settler, and year after year impoverishes him.

Safety Clothing.—Personal safety from burning is a question of serious import at all times, but more so at this particular season of the year. During the cold weather, when grates or other heating apparatuses are used in almost every house, and when artificial light is more extensively required for illumination, a greater number of accidents occur from clothes taking fire than in any other equal period of the year. This we may always expect, because the dangers are more numerous ; but to the common causes of deaths from burnings, the sad list of victims has been greatly extended by the fashions in dress which have become prevalent among women Ladies' dresses are now so extended in their proportions, and being oftentimes of the most inflammable materials, it is no wonder that we frequently read of families being thrown into the deepest grief by some of their most amiable members having perished from their dresses becoming their funeral pyres. Such casualties shock the feelings more than any others, because we all know that the pains arising from burning are of the most excruciating character.

So frequent have such accidents become during the past two years, that some of the highest efforts of science have been brought into requisition for their prevention. The moral argument against the causes of exposure by unsuitable dresses has been ineffectual ; fashion hold its sway in spite of all remonstrances and so many terrible lessons, and all that science can do in the case is to guide it to the most humane and safe results. This has been achieved by chemistry in the preparation of chemicals to be combined with the combustible fabrics of which dresses are made, whereby they are rendered nearly inflammable. In Great Britain, these chemicals are now used in several large bleach-works, where they are combined with the pieces of goods in the finishing operations. They are also employed very extensively in large laundries and households, and they commend themselves to public attention everywhere. The best substances recommended for common use in rendering textile fabrics non-inflammable,are tungstate of soda and the sulphate of ammonia, which are now manufactured on a large scale for such purposes by a company in London, which has obtained two patents for the processes. In a late number of the *Chemical News*, Messrs. Briggs & Co. describe the mode of using these salts to the best advantage. Articles requiring to be ironed, after being washed, starched and allowed to dry in the open air, are soaked in a solution of the tungstate, then rolled in a sheet of dry linen, and ironed after in the ordinary way. The tungstate may be mixed with the starch, but this is not such a good method as the other. Articles which do not require to be ironed are treated with a solution of the sulphate of ammonia in the same manner as the tungstate of soda. Muslin so prepared does not present any peculiar appearance, and when exposed to fire it does not suddenly burst into flames ; it merely singes away till it crumbles into ashes. Woolen and silk fabrics are not sufficiently inflammable to be dangerous, but all linen and cotton clothing, curtains for windows, sheets and various other articles, would be rendered more safe by such treatment, without injury to their texture or color. The treatment of children's clothes by these substances is especially solicited, because so many accidents from burning take place to the "little ones at home."

We should not wish to be understood as asserting that the two substances described are the only ones for rendering such fabrics uninflammable, as there are several other articles which posess this property ; but according to F. Versmann and A. Oppenheim, London Chemists, who have made a host of experiments with various chemicals, the tungstate of soda and the sulphate of ammonia give the best results.—The stannate of soda appears to be equally as good a non-inflamable agent, but it is liable to impart a yellow tinge to white muslins ; still, for children's cotton dresses, we can recommend its very general use. About one part of these salts dissolved in ten parts of water is about the proper strength to employ, and one gallon of this is sufficient for impregnating seven or eight ladies muslin dresses. Being very easy of application, all familes should avail themselves of these substances for rendering life more safe from the dangers of fire.

We use, in our nursery, a brass wire grating, somewhat in the form of a blower, to hang in front of the grate. This is compact, convenient, and effectual ; it not only protects the dresses of the children and nurse from contact with the fire, but it is quite a safeguard to the carpet from coals rolling out of the grate.—*Scientific American.*

Durability of Chesnut Shingles.—In June 1834, I assisted the owner in shingling the east roof of a barn, 50 feet long and about 40 feet wide, with sawed chesnut shingles, and that roof

is still good, and with a little patching will last several years longer. The roof of a woodhouse, which I helped to shingle with split and shaved chesnut shingles in 1830, bade fair, the last time I saw it, to last till 1875. The roof is very steep, and the shingles on an average were quite narrow. They were well laid, four and a half inches to the weather and two nails in a shingle. Some object to this, and say, but one nail should be driven into chesnut shingles, owing to their shrinkin and expanding so much under the influence of the sun and rain.—*Boston Cultivator.*

Love of the Beautiful.—There are many persons in this world who would scout the idea that there is any necessity or any use for people who are not rich, to make any provision for their ideal life,—for their taste for the beatiful. We can picture to ourselves utilitarian old hunks, sharp-nosed, shrivelled-faced, with contracted brow, narrow intellect, and no feeling or taste at all, who would be ready (so far as he was able) to ridicule our assertion, that it is desirable and possible to provide something to gratify taste and to elevate and refine feeling, in the aspect and arrangement of even the humblest human dwellings. —*Fraser's Magazine.*

The Predominance of Water in the Composition of Vegetables and Animals.—Potatoes contain 75 per cent. of water (by weight,) and turnips no less than 90 per cent. which explains, by the way, the small inclination of turnip-fed cattle and sheep for drink. A beef steak, strongly pressed between blotting-paper, yields nearly four-fifths of its weight of water. Of the human frame (bones included) only about one-fourth is solid matter (chiefly carbon and nitrogen), the rest is water. If a man weighing ten stone were squeezed flat under a hydraulic press, seven and a half stone would run out, and only two and a half stone of dry residue would remain. A man is therefore, chemically speaking, forty-five pounds of carbon and nitrogen diffused through five and a half pailfuls of water. Berzelius, indeed, in recording the fact, justly remarks, that "the living organism is to be regarded as a mass diffused in water," and Dalton, by a series of experiments tried on his own person, found that of food with which we daily repair this water-built fabric, five-sixths are also water. Thus amply does science confirm the popular saying, that water is the "first necessary of life."—*Quarterly Review.*

The Place for Summer Enjoyment.—It is pleaseanter to spend the summer days in an inland country place, than by the seaside. The sea is too glaring in sunshiny weather; the prospects are too extensive. It wearies eyes worn by much writing and reading to look at distant hills across the water. The true locality in which to enjoy the summer time is a richly wooded-country, where you have hedges and hedge-rows, and clumps of trees everywhere: where objects for the most part are near you; and, above all, are green. It is pleasant to live in a district where the roads are not great broad high-ways, in whose centre you feel as if you were condemned to traverse a strip of arid desert stretching through the landscape, and where any carriage short of a four-in-hand looks so insignificantly small. Give me country lanes: so narrow that their glare does not pain the eye upon even the sunniest day; so narrow that the without an effort takes in the green hedges and fields on either side as you drive or walk along.—*Fraser's Magazine.*

The Curative Effects of Grapes.—Dr. Herpin, of Metz, has published a very interesting account of the curative effects of grapes, in various disorders of the body. They act, firstly, by introducing large guantities of fluids into the system, which, passing through the blood, carry off by prespiration and other execretions, the effete and injurious materials of the body; secondly, as a vegetable nutritive agent. Employed rationally and methodically, aided by suitable diet and regimen, the grape produces most important changes in the system, in favoring organic transmutations, in contributing healthy materials to the repair and re-construction of the various tissues, and in determining the removal of vitiated matters which have become useless and injurious to the system. Dirrected by a skillful physician, this valuable curative agent can be made to produce the most varied effects on the constitution. It also possesses the advantage of being acceptable to most invalids. The treatment lasts from three to six weeks. The quantity of grapes that may be consumed varies from one to four pounds a day, commencing with small quantities, which are gradually increased. The skins and seeds must not be swallowed. In the absence of grapes, the most beneficial effects may be obtained from dried raisins, provided a quantity of water, sufficient to satisfy the thirst they excite, be taken at the same time; or they may be stewed in the same manner as prunes.

The Chameleon.—An officer in Africa thus writes of the habits of this animal:—'As some of the habits of the chameleon may not be generally known, I will mention a few which came under my observation. One morning, I saw close to my tent, a very large chameleon, hanging on a bush. I immediately secured him, and provided a box for him. In the course of a few days he became quite familiar, and having seen them before, I knew how to gain his affections, which, in the first place, was done by feeding him well, and, in the next place by scratching his back with a feather. I used to put him on my table at breakfast, and in the course of a very few minutes I have seen him devour at least fifty flies, catching them in the most dexterous manner, with his long slimy tongue; nor does he ever move from his position, but so sure as an unfortunate fly comes in reach, so sure he is caught, and with the rapidity of thought. In the forenoon I always gave

him a large slice of bread, which he devoured, and he generally suppe ' on as many flies as he could manage to entrap, setting at defiance the 'noble Hamlet's' theory of the chameleon's death. Promises would not have suited him at all, being at the end of each day considerably more like a crammed capon than an air-fed chameleon. It is not true that this animal will change color according to what he is put on; but he will change shade according as he is pleased or displeased. His general hue is a bright green, with small gold spots over his body; he remains at this shade when he is highly pleased, by being in the sun, or being fed, or scratched, which he delights in. When angry—and he is easily made so—his hue changes to a dusky green, almost black, and the gold spots are not to be seen; but I never could perceive any other color on his body but green in a variety of shades. The spots enlarge very much when he is in good humor—so much, indeed, as to give a yellow tinge to the upper part of the animal, but in general they are merely little yellow spots here and there, on the back and sides."

The World's Inhabitants. — M. Dietrici, director of the Office of Statistics at Berlin, has published in the annals of the Academy of that city the results of his researches relative to the present population of the globe In addition to his calculotion of the total number of inhabitants, which he puts down at upwards of 1,288,000,000, M. Dietrici estimates the number of the different human race as follows:—The Caucasion, 369,000 000; the Mongel 552,000,000; Ethiopian (negroes), 196,000, 000; the American (Indians), 1, 000,000; the Malays, 200,000,000. The leading religious he divides as follows:—Christianity reckons 335 000,000 adherents; Judaism, 5,000, 000; the Asiatic religious,600,000,000; Mahomedanism, 160,000,000; and Polytheism, 200,000, 000. Of the Christian populations, 170,000,000 belong to the Roman Catholic Church; 80,000, 000 to Protestantism; and 76,000,000 to the Greek Church.

Sawdust as a Fixer of Ammonia.—Sawdust is one of the very best absorbants for liquid manures. Mixed with dilute sulphuric acid, it is one of the best materials for fixing the ammonia which is given off in stables. The following experiments have been put on record: A shallow basin, in which sawdust moistened with dilute sulphuric acid was spread, was hung up in a stable, and in the course of three weeks all the acid in the sawdust was completely neutralized by the ammonia in the air of the stable, and a considerable quantity of sulphate of ammonia was formed in this manner. For this reason, sawdust mixed with sulphuric acid is recommended as a means of keeping stables sweet and wholesome. The acid should be diluted with forty-five times its bulk of water, before it is applied to the sawdust. Just enough should be applied to make the sawdust feel damp. On account of its porosity, sawdust retains the acid very perfectly, and presents a large surface for the absorption of the ammonia.

Is Consumption Contagious?—It is most probable that consumption is not of itself communicable, that it cannot beget consumption in one who has vigorous health and is perfectly free from all taint of the disease. But if any person who has not a vigorous constitution, whether inclined to consumption or not, lives, eats and sleeps with a codsumptive, as man and wife do, as a sister is apt to do with a consumptive sister, or a mother with consumptive children, such a person will very generally die of consumption themselves, not from its communicability *per se*, but from the foulness of the atmosphere about a consumptive, from warm rooms, decaying lungs, large expectorations, sickening night sweats, and bodily emanations; but the same amount of exposure to air made foul in other ways, would light up the fires of consumption in one of feeble vitality or broken constitution.

It is necessary, therefore, that the nurse of the consumptive should posses the most vigorous health, and to make assurance from infection doubly sure, the most scrupulous cleanliness possible should be observed and carried out in every conceivable direction, extended to every minutia, maintained with the most inveterate constancy through every hour of the twenty-four, not allowing any exretion, even a single expectoration, to remain about the person, bed or room, for one instant. An incessant ventillation should be going on in the chamber, the best method for which under most circumstances, is simply to keep a fire on the hearth and an inner door open; even in mid-summer, this is better for the patient as well as for the nurse, than a room kept closed all the time from an almost insane dread of taking cold.

Origin of the Post Office.—The original establishment of the Post-office in England is buried in obscurity. It is certain that a species of post—though of what nature cannot be ascertained—was in existence as early as the reign of Edward III. The earliest mention of a chief postmaster for England is in Camden's *Annals*, under the date of 1581; but what his office was, or how it was managed, does not appear clearly; and probably, from the limited state of the correspondence of the country, it was of trifling consequence. James I. erected the first post-office for the conveyance of letters to and from foreign parts, which he placed under the control of Mathew de Quester or de L'Equester. This office was afterwards claimed by Lord Stanhope, but in 1632 was confirmed and continued to William Frizel and Thomas Witherings by King Charles I. It would appear that, previous to this time, private persons were accustomed to convey letters to and from foreign parts, but all such interference with the postmaster's office was expressly prohibited, and in 1635 all private inland spots were forbidden.—*City Press.*

AYRSHIRE BULL FOR SALE.

MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,
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Toronto, Aug., 1861.

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AN experienced English Agriculturist, for several years practically acquainted with the Canadian Farming, wishes to undertake the management of a Farm, either on shares, or as Bailiff to the owner.

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Paris, C. W. June, 1861 3t.

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A PURE bred young short horn Bull; Sire and Dam imported in 1857, and *both* took First Prizes at the Provincial Show in Brantford the same year.

Address, R. R. Bown, Brantford.

N. B. Full blooded cow stock taken in exchange, if desired.

Brantford, April 8th, 1861. 4-t

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OR

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OF UPPER CANADA.

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Classification of the Aliments to be Considered in the Production of Milk.

[Abridged from the "*Journal de la Societe Centrale d' Agriculture de Belgique.*"]

Every agriculturist knows that the milk of horned animals is liable to remarkable phenomena, which occur frequently during different periods of the year. Thus it is not uncommon to see the milk on a farm increase or diminish, according to the seasons, and without any apparent cause, always affecting the "traction" (milking) in a similar number of cows. After that, the milk is by and by of good quality, while a little later it has a mixed taste, and is soon spoilt, or liable to morbid changes. In one farm this substance is bitter, vitiated, and incapable of coagulating; in a neighboring farm it is sweet, soft, rich in buttery substances, in caseum, and agreeable to the taste. Here it is of a dull tint, grey or whitish; there it is strongly colored with blue, with red, or even with a shade of lead color; elsewhere quite the contrary is observed, and the milky secretion is seen to increase, diminish, or cease entirely. What is the cause of these changes? What mean the various peculiarities which we have just noticed.

It is well known that the quantity and the nature of the food given to the cattle have great influence on the qualities of the milk. If reason did not give the force of law to this observation the facts that can every day be collected in the districts of Herve, Dixmude, Neufchateau, every where, in short, where animals of the bovine species receive abundant nourishment—would soon establish the justice of the principle. Starting from this line of consideration, several German, English, and French writers have pretended that it is possible to classify the food given to the cows, and afterwards to determine their value, according to the quantity of milk which they cause to be produced. They have thus admitted, in a general manner, that 100 lbs. of good meadow hay (well harvested) are worth

200	lbs.	Potatoes.
460	"	Beetroot, with the leaves
350	"	Siberian Cabbage.
250	"	Beetroot. without the leaves.
250	"	Carrots.
80	"	Hay, Clover, Spanish Trefoil or Vetches.
50	"	Oil-cake, or Colza.
250	"	Pea Straw and Vetches.
300	"	Barley or Oat straw.
400	"	Rye or Wheat-straw.
25	"	Peas, Beans, or Vetch-seed.
50	"	Oats.
500	"	Green Trefoil, Spanish Trefoil, or Vetches.

If these proportions are just and well established, which we will readily admit to a certain point, it is also right to say that there are certain inaccuracies, which it will not be useless to mention. Thus, is it not plain that the straw and hay grown on a rich and loamy soil are much more nourishing than that grown on exhausted

ground? Does this not prove that there is a great difference between fresh straw, and that which has been long thrashed—between the straw produced by cereals completely ripe, and that of cereals cut before maturity—between the produce mixed with bad herbs, and that which has been kept in a proper state of cleanliness? It must be remarked, that each kind of food exercises a different action, according to the nature of the animals which consume it. One likes straw, another prefers hay, one agrees better with meadow hay than clover, while another thrives better in pasture than in the stall. The nutritive power of the food, moreover, is influenced by the state of the temperature. The nourishment acts differently, according as the weather is dry, dull, or rainy—according as the animals are left at rest or used for hard work; and according as they are well or ill treated. It it is equally unquestionable that the milk is much more abundant in one season than in another, which must necessarily be attributed to the direct influences of the armosphere.

This is not all—the disposition materially affects the milk. Give any horned animals new or particular food, and you will immediately perceive a change in the flavour and the color of the milk. This fact has been again recently established, by an experiment made at an institution for instruction in agriculture. Food, consisting exclusively of spergula, had been given to the cattle at this establishment; and this food, to which are attributed such precious properties for milk in nearly all the other districts of Belgium, had been almost forsaken by the animals; it is needless to add, that after that the milk suffered a considerable diminution, both in quantity and quality.

This example shows once more that the natural disposition of each animal acts for good or for evil upon the organs of digestion, and has consequently a direct influence upon the animal economy, and upon the amelioration or the deterioration of the milk. It only remains for us to add to the preceding observations, that any sudden excitement of sensations, as fear, alarm, &c., produces unpleasant results upon the quantity of milk obtained from the animal. The proof is, that the state of the food and of parturition remain the same, the secretion is much more abundant when care is taken to leave the animals quiet, and when their food is given to them at regular hours, as is the case on every well-directed farm. Let us observe, in short, that the same food may produce opposite effects, according as it is very cold, very hot, or at an ordinary temperature; and that it is much better for the animal to favour perspiration and digestion, either by baths or other means.

It is thus seen how inexact are the equivalents which are understood to be established for the different food used for the maintenance of the animal. It is equally plain, when we reflect on the different methods pursued for the preservation of the animals, that we are still far from having attained that perfection towards which our efforts tend. Visit one hundred farms, taken by chance, in different parts of the country, and you will find, in each, methods directly opposite—a totally peculiar manner of managing the stalls; you will see in short, that the conditions of food, of treatment, and of hygiene remain not understood in seven-eighths of rural farms.

Veterinary Practice and Instruction.

We have much pleasure in announcing that Mr. A. Smith has arrived in this city, from Scotland, and that he intends commencing the practice of his profession as a Veterinary Surgeon. under the patronage of the Board of Agriculture. For some time, as several of our readers know, the Board has been making arrangements of this nature, and we are now happy to find that their important object is about being realized. Mr. Smith comes among us with the highest testimonials as to personal character and professional ability. He is a graduate of the old Edinburgh Veterinary College, founded and presided over for nearly half a century by the celebrated Professor Dick. We observe from an elaborate report, published in the *Scotsman*, of the late terminal examination of the college, that Mr. Smith won a very distinguished position. The number of students was large, and the competition consequently great. The standard of examination in this college, as well as that in London, is high, and much more difficult than formerly; and among the examiners were some of the distinguished Professors in the University

of Edinburgh. Mr. Smith had the honor of obtaining the medal of the Highland and Agricultural Society of Scotland, for the best general examination; also medals for the best examination in chemistry, anatomy, and materia medica, respectively. What the Board have particularly in view in getting out a Veterinarian whose professional education is fully up to the present advanced state of the science, is first that he may establish for himself a remunerative practice, and communicate instruction to students and young farmers, in the hope of ultimately forming a regular Veterinary school for the Province.

Australian Farming.

[The following facts, from an article in the *Farmer's Journal*, published at Melbourne, will give the reader some idea of managing rural affairs in the flourishing colony of Victoria, where the advantages of agricultural machinery are beginning to be understood and appreciated.]

"A short time since we paid a visit to the farm of Mr. Barton, situated on the basaltic plains at the southern base of the Anyaghe Yowang, about half way between Geelong and Melbourne Railway. Mr. Barton, like some of the most successful farmers in the Australian colonies, as well as in the United States, had no knowledge of farming, practically or theoretically, till he arrived in these colonies; but being a shrewd observer, he has made good use of his opportunities since that period, as will be seen by the sequel. A great deal has been said of late about farming not being a remunerative business, but against the opinions of mere theorists we put the actual experience of a really practical man.

The soil on the ranges, and on the slopes in the immediate vicinity, is of the richest description, and consists of a deep black mould, such as we generally find near the site of volcanic eruptions. The natural grasses are very luxuriant, and support at the rate of about three sheep to the acre. One gentleman has 2,000 acres fenced in, and rendered sheep proof, which supports, at the present moment, 3,000 sheep.—The crops, too, have turned out excellent, and as much as forty bushels of wheat and upwards per acre have been attained on the slopes of the ranges. Mr. Barton's farm, however, is situated at some distance from the ranges, and the soil is of a very different description from that referred to. Here the soil is of a brownish, stiff clay, bare on the surface, and here and there a plentiful outcrop of boulders. The natural grasses too are of the poorest kind. In fact, the farm forms a part of the stony plain before mentioned; and as bleak, barren, and unpromising a plain as one could well imagine. It will be seen, then, that the soil Mr. Barton had to operate upon was not the very best in the world; in fact there are hundreds of thousands, we might almost say millions, of acres similar to this in the colony, considered to be totally valueless except for sheep-grazing purposes. The vast dreary, treeless, basaltic plains, which extend westward from the Moorabool to the Hopkins, at present but partially occupied as sheep runs, are precisely the same description of land as we are speaking of; and there are large tracts of a similar kind in various parts of the colony. The actual working expenses in the cultivation of soil of this description, together with the produce per acre, we shall now endeavor to lay before our readers.

The actual working expenses, then, in ploughing, sowing, and harvesting, on this farm, in 1859 (we take this year because the season following was altogether an exceptional one, from the excessive rains, and Mr. Barton had in the meantime removed to another farm which was already cropped), amounted to £1 4s. per acre. This is allowing one pair of horses to plough five acres per week, the land being previously broken up; and allowing for wages 20s. rations 6s., horse feed 10s., and blacksmith work 4s., per week. Total for five acres, 40s. or at the rate of 8s. per acre. In sowing—two teams of working bullocks (four bullocks to the team) and one man, for sowing, managed five acres per day, allowing wages and rations as before, and a little for tear and wear, the expense will be 12s. 2d. for five acres. Then there is the seed at the rate of 1¼ bushels to the acre, 12s. 6d.—for the five acres, 62s. 6d.; allow also for contingencies an additional sum, say 5s. 4d. This will make for the whole five acres £6, being at the rate of £1 4s. per acre. In harvesting, Mr. Barton employs one of Mellor's Adelaide stripping machines, along with one of Hornsby's spike roller winnowing machines, and so the reaping, winnowing and bagging operations are carried on in the field at one and the same time. By using these machines he was able to reap, clean and bag his wheat at the rate of from seven to eight acres per day, and at a cost of (what to many may seem incredible) only 9s. per acre!—Mr. Barton estimates that the whole of the plant and machinery requisite for farming, say 150 acres of wheat, on land similar to his own, may be purchased for £200; and he believes that £50 per annum, or 25 per cent., for tear and wear, depreciation of stock, &c., would be amply sufficient. On 150 acres, then, this would amount to 6s. 8d. per acre. The wheat crop on this farm yielded from 20 bushels and upwards per acre, and the price obtained on the farm was 7s. 3d. per bushel on the average.

We think we are now in a position to ascertain whether farming, as carried on under such conditions as we have referred to, and accord-

ing to this system of management, will pay or not. Allowing, then, the same rate of expenditure as we have given above, together with a fair rent for the land, say 20s. per acre; and say the extent of land under wheat to be 150 acres, averaging 20 bushels to the acre, the price, say 6s. per bushel; and we have the following result:—

Ploughing, per acre	£0	8	0
Sowing	0	2	6
Seed, at 1¼ bushel	0	12	6
Reaping, &c	0	9	0
Tear and wear, and depreciation of stock	0	6	8
Rent	1	0	0
Cost per acre	£2	18	8
150 acres, 29 bushels, at 6s	£900	0	0
Cost of do. at £2 18 8d per acre	435	0	0
	£465	0	0

Showing a profit more than cent. per cent, to the annual outlay.

This is, no doubt a very different result from what most farmer's books will show. It is on the reaping, threshing, &c., that the greatest amount of expenditure is incurred, under the old system of hand-reaping. Under this system, instead of 9s. per acre, as above, the expenditure will be somewhat as follows:—

Reaping per acre	£1	0	0
Rations and grog	0	2	2
Carting	0	5	0
Thrashing	0	11	8
Winnowing and bagging	0	5	0
Cost per acre	£2	3	10

This amount added to the £2 9s. for ploughing, sowing, and other expenses except reaping, will amount to exactly £5 12s. 10d. per acre; and 20 bushels per acre. at 6s., will amount to £6, from which deduct the cost of production as here given, will leave a balance in favour of the farmer of only 7s. 2d. per acre, instead of £3 1s. 4d. Of course, farming will not pay at this rate; and the farmer can only cultivate with profit on rich soil, when the produce exceeds the amount we have taken as our average. We will refer to this subject on a future occasion, meantime we think we have furnished materials enough to engage the consideration of our readers.

Scientific Culture of the Strawberry.

[*From the pen of Mr. Leonard Wray, in "Simmonds Technologist."*]

Amongst our British fruits the strawberry holds a very high rank, and is justly esteemed both for the table and for preserves. A very large extent of land is appropriated to its culture, much capital is expended, and no small amount of "art" is exhibited in bringing this before the public in its choicest condition.

Size, colour, and flavour have been studied very successfully, as the large and beautiful specimens which are exhibited at the various horticultural shows, and in the windows of the fruit sellers, fully demonstrate. New varieties are eagerly sought for, and found by the great strawberry growers—as Myatt, Turner, Robertson, and a host of others; and as the result of their intelligent labours we see, and fully appreciate, in those choice new varieties, the "Oscar," the "Wizard of the North," the "Surprise," the "Empress Eugenie," the "Mammoth," the "Prolific Hautbois," &c.

These are of the highest excellence; and in our northern climate can possibly not be surpassed in point of size, colour, and juiceness—points so assiduously aimed at by our great strawberry growers; but we may well inquire whether these varieties, or any of them, fulfil all those conditions so necessary in a really perfect strawberry plant. In fact, we may and must ask the question, "Is science brought to bear on the art of strawberry culture in this country?"

We fear that we shall "offend the susceptibilities" of a great number of professionals and amateurs, when we express our opinion, that in the culture of the strawberry tn the United Kingdom science has not been applied in aid of the art so liberally bestowed.

We take the ground, that so hardy a plant should certainly appertain more to open field culture than to the elaborate and expensive horticulture of the garden. The former may be designated as a natural growth, under man's care and supervision; the latter is truly a forced and unnatural (*id est*, an artificial) existence, more suited to the requirements of a tender exotic than to the hardy strawberry.

Growing wild, close to the Falls of Montmorenci (near Quebec), we have seen and eaten its highly flavoured fruit, the intense frosts of Canada and Labrador hurting it not. In the sweltering regions of Charleston and Savannah (in South Carolina and Georgia) we have feasted upon it for many months in the year, the tropical heat doing it no harm. On the Alpine heights, and in the hot valleys of Spain, it meets us again. Far up on the Himalaya mountains, beyond "Nynee Tal," and even the highest abode of man, this kindly fruit offers its tiny fruit to the weary and adventurous traveller. Down again in the heated vales of Cashmere we find it expanded into a greater size, and remarkable for its lusciousness and aroma.

Why, then, is this plant treated in England like a weak and tender exotic? Why is it so pampered, so swathed, so swaddled, and its hardy habit so utterly ignored? It is because science has not been applied to the art of growing this great gift of nature.

The productions of Myatt, Turner, and others, are admirable in their way, and for the especial destination for which they are grown—viz., for the tables of Belgravia, and of the richer classes; but for the million, and for those great preserve-makers, Crosse & Blackwell, Batty & Co., and others, who supply millions of families with strawberry jam and jelly, in small and very thick-bottomed pots, their modes of culture are wholly unsuitable, and the supply furnished is totally inadequate to the demand.

Let us now examine into the causes of all this, and let us see if science will not aid us in bringing about a very different state of things.

Botanists have been too much in the habit of promulgating the doctrine that in the strawberry flower the male and female organs exist in a perfect state; whereas generally speaking, this is by no means the case, for the sexual difference is peculiarly well marked in almost all varieties of the strawberries.

Let us sow the seed of a strawberry, and we shall find, on a careful examination of the seedlings, that we have obtained Staminates, Pistillates, and Hermaphrodites; that is to say, Staminates or male plants; Pistillates or female plants—neither of which, by itself, will bear a single berry—and hermaphrodites, or plants in which the male organs are perfect, and the female organs are more or less imperfect. It is said, and has been particularly insisted on in respect to certain varieties (especially amongst the white kinds), that some of these hermaphrodites possess both the male and female organs in perfection; but, although entertaining a strong doubt upon that point ourselves, we are nevertheless quite aware that, in particular instances, they do possess female organs very nearly perfect, sufficiently so, indeed, to lead to the common belief. On the other hand, we know that, in the great majority of cases, so very imperfect are these female organs in these hermaphrodites that they seldom produce other than a very scanty crop of inferior and imperfect berries.

The most vigorous of all are the staminates, or pure males, abounding in large flowers, and sending out a profusion of runners; the pistillates flower very abundantly, but have small blossoms, and very few runners; the hermaphrodites bear a medium sized flower, and throw out numerous strong runners.

For the purpose of the high-priced strawberry grower, the better kinds of hermaphrodites may and do answer admirably well, seeing that their object is to obtain only a very few large-sized berries on each plant; but place these plants in an open field, deprive them of their finely prepared mould and their hand-glasses, their artificial impregnation, and the unremitting care and watchfulness of their human attendants, and the truth would soon become apparent; they would be dead failures. In a word, for a general crop they are quite unsuitable.

About the year 1809, the celebrated horticulturist, Keen, from amongst his seedlings, picked out all those which had borne a heavy crop of fruit, and planted them in a bed by themselves, quite apart from those that had proved sterile, or had borne but lightly. Spring came, and with it his pet seedlings put forth a profusion of bloom, but his surprise was intense when he saw that there was no swelling whatever for fruit. His intelligent mind prompted a critical examination of the flowers, and then he discovered that the pistils, or female organs, were perfect, but that there was no stamens, or male organs; consequently, that his famous fruit-bearers were pistillates, or pure females. Having thus stumbled upon a very important discovery, his next step was to examine his other seedlings, and finding that they possessed male organs in perfection, he plucked a number of their flowers, and placed them in phials of water, and suspended them in different directions immediately over his bed of pistillates. His experiment was eminently successful; the pistillates began immediately to swell for fruit, and every blossom produced its berry.

These celebrated plants were known under the name of "Keen's seedling," but it is doubtful if they are in existence at this day, the variety so called now being a very favorite hermaphrodite, and not a pistillate. The reason for this is not difficult of explanation. Fine bearing pistillate plants are carefully removed from all others, and planted by themselves, perhaps, in some gentleman's garden, being regarded as a great treasure; the next season, abundance of blossom, but no fruit. This first miscarriage may be attributed to late frosts, slugs, &c.; so another season is awaited, but the same result disgusts both master and gardener, and the poor unmated females are declared worthless, and are cast on the dung-heap. In this manner profuse bearers are thrown away, and the partial hermaphrodite takes their place, and gives rise to the universal complaint, "How badly my strawberries bear! I had a fine show of bloom, very fine, but somehow or other I have had scarcely any fruit. It is provoking!" Yes, so it is—very provoking indeed; and, knowing and feeling this, we are now endeavoring to diffuse a little information on the subject, hoping that our readers will circulate this information, as well as take advantage of it in their own practice.

After Keen, a Mons. Duchesne arrived at a similar knowledge of the sexual differences in the strawberry plant; but as far as the practice is and has been concerned, it really seems as if the discovery made and published by Keen had been entirely lost sight of. We have conversed with our largest and most eminent nurserymen and seedsmen, and have even ventured in our innocence to speak on the subject of staminates, pistillates, and hermaphrodites to the fruit sellers in Covent Garden market and in the city;

but the blank looks of some, and the honest confession of others that they really did not know anything about the matter, would lead us to the conviction that if these sexual differences are known and recognised at all in England, it must be by very few, indeed. It may be that strawberry growers posses this knowledge; but, if so, they keep it remarkably secret, perhaps that they may reap the greater (supposed) advantage from its exclusive practice, although we can scarcely imagine this. We were ourselves as ignorant on this subject as the English public at large until we visited the town of Cincinnati, in the United States, and had the matter clearly explained to us by our highly esteemed friend, Robert Buchanan, the celebrated wine grower of Cincinnati—a gentleman who, together with Nicholas Longworth, has done so much real good for his country. In Mr. Buchanan's instructive little *brochure* on "grape culture" is included some very interesting letters, statements, and reports upon the culture of the strawberry plant; and as these afford most valuable information we shall briefly allude to them.

(*To be continued.*)

Canada as a Field for Flax Culture.

We take the following article from the *Northern Whig* of August 28th, a leading commercial paper published in Belfast, Ireland. The gentleman alluded to as visiting that country in connextion with the Canadian government is Mr. Donaldson, who has just returned home. Mr. Donaldson, we understand, is favourably impressed with regard to the profitableness of flax growing in Canada, and as he intends visiting the approaching Provincial Show, to be held in London, he will doubtless have an opportunity of stating publicly his views on this important subject, which must soon more earnestly and generally occupy public attention.

The never ceasing energy of the Lancanshire cotton-spinners has been the wonder of all nations at all able to comprehend the gigantic efforts they have made, year after year, for the larger suppy of raw material. In their case neiter time nor money has been spared for the accomplishment of the great object in view, and the resut has been to bring into play an annually increasing amount of cotton wool, equal to the almost illimitable wants of the spindles.—Last year there were imported into the United Kingdon 12,419,000 cwts. of raw cotton, against 5,150,000 cwts. imported in 1840. Owing to the existing state of affairs in the different States of America, a decrease of supply may be looked for from thence; and to avert the consequences of any material falling off, the Cotton Supply Association has been actively at work. Already the agents of that institution are busily engaged in Egypt and the West Indian Islands, while east of the Ganges there are hosts of influences engaged in extending the growth of the Oriential staple.

Some few weeks ago, an inquiring gentleman wrote to the London papers on the vital question of cotton supply, and in course of his observations he proposed a new mode of preparing flax fibre so as to cottonise it, and thus add to the supply of material for muslin goods. The plan was excellent in is way, and brimful of ingenuity; but, unfortunately for its practical application, the spindles of our own staple trade have only been partially supplied with flax for some yeas past; there is, consequently not a single pound of that article to spare from its legitimate source of consumption. To give effect to any plan of producing from flax a substance like cotton we must first have enough and to spare—a result not likely to be realised for some years to come.

Merchants and other capitalists connected with the linen trade have been making great exertions, for years past, to bring about a more ample supply of raw material; but, to this day, the effect of their exertions has only been partial, and still the cry of famine in the flax market rings from Belfast to Dundee, and from Dunfermline to Leeds. During the last forty years, the value of raw cotton has so fallen in price that its manufacturers have been enabled to produce goods suited to the wants of all classes, and thus the use of muslin and calico as articles of clothing has become so general in nearly all parts of the world that steam power, acting on spindle and loom, is taxed to the uttermost of its gigantic strength to meet the necessities of the millions of people of all nations and climes who clothe themselves with the products of the cotton plant. We have alluded to the vast reduction which has taken place in the cost of cotton wool since 1841, but from that date no such change has occurred in the value of flax; and hence the linen trade has lost all the advantages which would inevitably have resulted from a gradually downward figure in the price of raw material.

Within the last few days, we have had some conversation with the highly-intelligent gentleman who, as the accredited agent of the Canadian Government, has been sent over to this country for the purpose of ascertaining the probabilities of success in a extended system of flax culture in Upper Canada. From all we have been able to ascertain on the subject, there seems to be no donbt that, by due energy on the part of the Canadian, coupled with a fair prospect of remunerative prices here, the lands of that colony would soon produce very large additions to our present supplies of flax. It is well known to those acquainted with the agricultural

affairs of Canada, that many of the farmers there have for years past been growing wheat on the same lands, until as was once the case with the potatoe fields of the South and West of Ireland, the soil has been seriously deteriorated in its productive powers. The change, therefore, from the incessant cropping with one description of grain to the rotary system caused by the introduction of flax-growing would benefit the soil hardly less than it would advantage the cultivator.

It has been said that the labour is still too high in Canada to admit of any remarkable success in the growth of the article that requires so much attention during its culture; but those who argue thus forget that the Canadian colonist is the monarch of the soil on which he has located himself. The land is his own property, purchased direct from the Crown; he does not owe fealty to any landlord. Where he stands, within the limits of his farm, he is its chief; and the extent of local taxation does not exceed a fractional per-centage on the value of his land. Then, as to the nominal price of labor, we grant it is far above the value in this country. As a sett-off, however, it may be stated that an able-bodied man will do as much work there in the course of a day as is usually performed here in a day and a-half. Agricultural energy is pushed on with great spirit; in fact, the farmer and his operatives seem to work with steam at high pressure.

If, then the Canadian flax-grower has so many things in his favor—if he has lands which contain all the elements so peculiarly required for the food of the plant—we do not see why he should not be able to produce a quality of fibre which would fully remunerate him for his outlay and enterprise. What with the recent improvements in the machinery for spinning yarn, and the remarkable success that has attended the adaptation of steam to the linen loom, there seems to be no limit to the quantity of flax that could be worked up in the United Kingdom, were that flax produced in such amplitude and at such prices as would give full play to the taste for the wear of linen as the article of clothing. For some years past, the supply of flax have actually been falling off in the country. In 1853 there were 1,882,400 cwts. of foreign flax imported, and 867,000 cwts. growing in Ireland. Last year the imports only amounted to 1,464,300 cwts., and the produce of Irish lands did not exceed 650,000 cwts. While this decline was going on in the supplies of flax, those of cotton rose from 8,500,000 cwts. to 12,419,000 cwts.

The India Flax Society has gone to work in right earnest, and we doubt not, will be able to produce large accessions to existing supplies; but, granting all this, there will still be a wild field of operations; and that field might be well in Canada. Were the farmers in that colony to raise annually three hundred thousand acres of flax, every single stone-weight of the produce could be worked up by Irish spindles alone. We would request the special attention of spinners, manfacturers, and bleachers to this subject. It is a vital one now, more than ever it was before. With the ports of France opening to us, Belgium will also take largely of our yarns and linens.

The Hanse Town, with their half million of people, took last year ten million yards of our linen cloth; and Holland with its population only equal to that of the city of London, took three and a half million pounds of yarn. Other States are following in the wake of these Free-trade countries; but, to enable our capitalists to take full advantage of the favorable opening for yarns and goods, there must be a full supply of cheap material. Canada is now within nine day's run of the Irish coast; facility of transport is, consequeuntly, on the side of the enterprise; and, if the flaxspinners and merchants of Belfast and other seat of the manufacture join with the Canadian Government in setting the thing afloat, the project cannot fail of success. So far as we can learn from merchants conversant with the subject in Canada, as well as from the Government agent now in Ireland, the farmers require little more than something like certainty; but, if they produce flax of a certain quality, they will be sure of getting a ready market for it.

Numbers of North of Ireland farmers are located in York, of which Toronto is the capital. these men will only reqnire a short education to enable them to grow flax at least as well as their relatives who still reside in the old country. If farmers here can raise thirty-five to forty stones of clean fibre to the statute acre, Canadian settleas will soon be able to take as much out of their adopted soil.

Utility of Birds in Defending Farm Crops against the Attacks of Insects.

The harvest this season in France, it is said, will fall much short of former averages; and one of the principal causes assigned is the increasing destruction of late years of the smaller kinds of birds, for the various forms of French cookery. It is well known that some kinds of birds in particular feed on the larvæ of insects, which if allowed to mature often prove injurious and sometimes destructive to the crops both of the farm and the garden. In matters of this kind nature has beneficiently established a wise system of self adjustment and compensation, whose economy it is unwise and often fatally injurious to disturb. Rookeries in Europe have sometimes been complained of by the neighboring farmers

as the birds will devour sown grain unless prevented by artificial means. But in cases where rookeries have been broken up, the crops have in all cases been found to have been afterwards attacked by insects in an unprecedented degree, and in many instances the farmers have prayed for the restoration of these interesting and useful communities.

From a report read before the French Senate, praying for the protecting of those birds which destroy insects hurtful to our crops, we find it stated that the wireworm consumed £160,000 worth of corn in one department alone, and was the cause of the three deficient harvests which preceded 1856. Out of 504 seeds of colza, all but 296 had been rendered worthless by insects, entailing a loss of oil equal to 32·8 per cent. In Germany, according to Latrielle, the *Phalaen monacha* consumed whole forests. In Eastern Prussia three years ago, more than 24,000,000 cubic metres of firs had to be cut down, being so destroyed by insects. Man is unable to cope with these destroyers of the produce of his labours. His eye is too dull to perceive, and his hand too slow to catch them. Without the aid of birds he would be vanquished in the struggle. The commission, while it excludes birds of prey from its protection, partially includes buzzards and rooks, because the former consume 6000 mice yearly, and the latter an incalculable amount of wire-worms and other grubs. Sparrows are re-habilitated, and their usefulness shown by reference to the facts, that when their destruction was attempted in Hungary, winged insects increased so rapidly, that rewards for the destruction of sparrows were suppressed, and given for bringing them back. Frederick the Great ordered the destruction of sparrows, because they ate his cherries; but in two years time he found his cherries and all other fruits devoured by caterpillars. In a sparrow's nest in a terrace in the Rue Vivienne were found the remains of 700 Tipulæ, the larvæ of which turn to wire-worms—the greatest enemy the gardener and farmer have to contend with. Owls, and birds of that class, which agricultural ignorance pursues as birds of evil omen, ought to be welcomed. They are ten times more useful than the best cats, and not dangerous to the larder. The martins that were killed were found to have in their stomachs the remains of 543 insects. In order to protect these insect devourers, the report proposes the prohibition of all means of destroying birds save by fire-arms, with the exception of nets for wild ducks and palmipedes generally. The report also proposes the prohibition of bird-nesting, and destruction of eggs and the young birds."

We append an extract from another source, in reference to rooks versus grubs:—

"The grubs of the tipula family are amongst the most destructive enemies the gardener and farmer have to contend against. Their eggs are deposited in the soil. As the grubs are hatched they commence an active attack on the roots of most plants. The perfect insect appears in August, and is well known in Scotland as Daddy Longlegs—in England as Gaffer Longlegs, Tom Taylor, or Tommy Longlegs. Their operation, being carried on under ground, enables them to elude the vigilance of man, but the instinct of the rook is a match for them. It has been calculated that a family of rooks will consume 3,847 grubs per day. Supposing the consumption to be continued throughout the year, it would amount to 1,404,156; and supposing a single grub to destroy as many plants of wheat or other crop as might grow upon a space of nine inches square, a family of rooks would preserve from destruction more than two acres of corn. If we extend our ideas further, and suppose all these grubs to live and propagate their species, it is more than probable that if this one species of bird alone were extinct, the labour of the husbandman would be nearly, if not altogether, in vain. Man therefore, should be aware how he disturbs the balance of power maintained throughout the whole animal kingdom.

The power of reproduction in insects is often truly astonishing, and their destructive influence on cultivated crops, and sometimes even on the trees of the wild forest is equally remarkable, as our farmers of late years in particular, are but too well acquainted. The study of the formation, changes and habits of these little creatures is exceedingly interesting, and is pregnant with valuable, practical results. A correspondent in a recent number of the *Ohio Farmer*, speaking of the increase of insects, says:

"It is a well-known fact in natural history, that there is such a thing as alternate generation; and it is an equally well-known fact to entomologists, that there are viviparous and oviparous generations of the same insect, during the same year. May not the first generation of the army worm be oviparous, and the succeeding generation be viviparous, as in the following case of aphides. All the aphides, it has been well ascertained, which appear in the spring are exclusively females, no males being found till the autumn; and these females are endowed with a fucundity almost incredible. M. Latreille says that one female during the summer months, will produce about twenty-five a day, and M. Reaumur calculated that one aphis may be the progenitor of 5,904,900,000 descendants. It is not necessary for the young female aphides produced during the summer to pair with a male, which, indeed, would be impossible, as no males are then to be found; yet these females go on producing each their twenty-five a day of living

young ones, all of which become, in a short time, as fertile as their parent. The following calculation of the fecundity of a species of aphides, from Prof. Owen's lectures on "Comparative Anatomy," will offer some explanation of the extraordinary numbers in which these creatures sometimes occur. The *aphis lanigera* produces each year ten viviparous broods, and one which is oviparous, and each 100 individuals.

Generations		Aphis produces.
1st	"	1
2nd	"	100
3rd	"	10,000
4th	"	1,000,000
5th	"	100,000,000
6th	"	10,000,000,000
7th	"	1,000,000,000,000
8th	"	100,000,000,000,000
9th	"	10,000,000,000,000,000
10th	"	1,000,000,000,000,000,000

Salt as a Weed Destroyer.

Weeds are said to be robbers of the soil, taking that which was not designed for them, but for more useful plants. But, like other robbers, they do little mischief, if closely watched, and the proper means is taken to prevent their pilferings. Indeed, weeds are not an unmitigated evil, for did they not grow, and make ploughing, and cultivation, and hoeing, absolutely necessary, we fear our corn, potatoes, and all "hoed crops," would suffer for want of necessary culture; and the loss from this cause, especially in a dry season, would be far greater than it now is from foul weeds. While saying so much for the weeds, it must be admitted that there are some varieties so tenacious of life, and with such abundant means of propagation by the roots, that they are perfect pests, and among them there are the Couch Grass, Canada Thistle, &c. Almost every week some afflicted tiller of the soil applies to us for a sure and easy method of effecting their eradication. But we know of no easy process, for the price of success we have found to be the same as that which patriots declare to be the price of liberty, "eternal vigilance." Occasionally we have received accounts of partial success by the use of salt, while with others, perhaps from the use of too large a quantity, or an improper mode of applying, the remedy has been found as bad as the disease. Salt, in large quantities, will destroy almost all vegetation. There are only a few of our cultivated vegetables, such as as Asparagus, that will endure its liberal application.

A late English paper contains an account of of experiments by a practical farmer in the use of salt for the destruction of Couch Grass and other weeds, which were eminently successful, the salt not only proving effectual in killing weeds, but materially lessening insect depredators, and greatly increasing the crop of roots. We give the most important part of the report, to which we invite the especial attention of our readers. If such great benefits are to be derived from the use of salt, American farmers cannot learn the fact too soon.

"Some years ago, being troubled on my grass land with a weed which I could not eradicate by mechanical means, I sowed a heavy dose of salt, and at once effected the object. A season or two back, it struck me that if the experience was worth anything, it should teach me a quick way to rid my lands of weeds generally—the arable land, I mean. The consequence was that when the autumn arrived, the fields that were intended to fallow, received a very heavy coat of salt—coarse-grained, agricultural salt; which is, in fact, the sweepings from the salt works, and the refuse of the pans. The quantity sowed was 12 cwt. per acre. The winter which followed was a severe one, and, in connection with the frost, the chemical action of the salt upon the soil was charming to the eye, which delights in the sight of a beauiiful friable mold, in the place of a churlish, unkindly clay, which usually resists the expansive, and disintegrating glacial influences of winter. The field, too, on which the experiment was tried had long possessed a reputation for Couch Grass, and that particular species of it known as Water Grass, the most hopeless and most troublesome of all. The hoe would not kill it, the twitch rake would not gather it, and the children in seeking it on the surface after the harrows had left it exposed, usually secured half of it, and stamped the rest into the soil to perpetuate the kind. This Water Grass, then, which the hoe would not kill, which the rakes could not collect, nor the children pick off, was quietly disposed of, never more to trouble me, while it lay at its winter repose. The salt had slain the thief of my profits, noiselessly as the ferret sucks the life blood from the rabbit in its retreat; and when the first spring furrow was turned, the view of the shrivelled enemy—the enemy which had baffled all my ingeneuity and kept my exchequer low—was cheering indeed. One length after another of the sinuous, wiry weed, was examined, but there was no sign of life; not even at that critical point, not even at that critical point the knot, could I detect, by the means of the micriscope, any indication of vitality. The "foal's foot," which runs down far into the substratum, were many of them dead, though not all. In looking for the buttercup roots, also, scarcely any were to be found; and glad I was, for bother enough they had been to me.

"The land then received one or two furrows to incorporate the salt thoroughly, and diffuse its power beneficially, so that it might invigorate everywhere, and yet not remain in sufficient force in any once place to endanger the seed which followed.

"At the proper season, and without any other

preparation, the Mangel seed was sown, and speedily vegetated. There were but few weeds to hoe, for the salt had attacked the principal vitality in the seed of the annual, as it lay secreted in the clod, as well as that of the Couch Grass. and the mangels grew to be a finer crop than ever before flourished upon the same plot of land. The foliage was thoroughly vigorous, and the bulbs were remarkably well matured and sound. The weight per acre reached 25 tuns, when before the maximum had been 20 tuns—by the aid of several loads of dung and an immense amount of labour.

"The following year, upon a field of the same character, I tried the same experiment, varying the course of management in some degree. I applied, in October, 12 cwt. of salt, upon the upturned and weedy surface of that land destined for the root crop, and allowed it there to lie and do its silent work as before, until, in February, the soil was dry enough to allow of being worked. As in the first instance, the result perfectly justified the means. Together with the frosts of winter, the salt had performed wonders in breaking down the stubborn clods and comp essed, livery furrow slices. The soil was reduced to powder, and the weeds were gene ally dead, so that the Mangel, which was planted in a finely pulverised seed bed, had nothing to do but to grow without the rivalry of weeds—neither shaded by them from the sun, nor robbed by them of the nourishment purposely stored for their use. I said, however, that I introduced some change into my practice this second time. The change was as follows, Just after the last furrow was, I sowed 4 cwt. more salt, which I harrowed in before the seed was dibbled. The result proved the wisdom of the addition, I have reason to think—for the weeds were even fewer, the foliage of the Mangel was finer, and the bulbs were larger than in the former case, where the applicatlon of salt was merely made in the autumn.

"It strikes me that our Mangels are freed also from another enemy by the use of salt. I mean insects. Slugs and wire worm, both very destructive during certain seasons, are certainly banished by salt, if not killed."—*Rural New Yorker.*

On Economizing the Liquid Manure of Towns.

For a long time it has been know that if the liquid excrements of towns and cities could be collected and applied to the land, that the health of the people and the produce of the soil would be greatly improved. Considerable difficulty, however, of a pratical nature, continues to be experienced in this matter, and the benefits which science so clearly points out have, as yet, been but very partially realized This is not simply a question belonging to the denser populated countries of Europe, but it has a practical application and importance to all our larger towns in Canada. In the following correspondence between Mr. Chapman of Nottingham, and Walter Fyfe, the Agricultural Chemist, the readers will find much that is of an interesting and suggestive character.

My Dear Fyfe.—Knowing that you not only take an interest in the advancement of agriculture as a science, but have considerable practical knowledge in relation thereto, I wish to have your opinion and advice on a matter which has engaged my attention for some few months. Perhaps you are not aware that, since you left this part of the country, we have erected a number of public urinaries, which are used by a very great number of people—one in particular, near our post office, affords accommodation to about 2,000 persons daily. Now the value of human urine as a manure is universally admitted. If my memory serves me, Liebig (no mean authority) considers it to be the richest and most valuable of all liquid manures. He states that "a pound of human urine is sufficient manure for a pound of wheat." Then why shonld such valuable manure be wasted? At the single urinary I have named there is daily wasted an amount of manure that would, if collected and distributed on the land, produce 1,000 pounds of wheat. But the mere loss of this valuable material is not the only evil; for it passes into the sewers, thence to our streams, rendering them disgustingly offensive, and will if the evil be not checked, ultimately deprive us of our fresh water fish. We are sending to the other hemisphere for thousands of tons of guano annually, the chief merit of which, as a manure, is its ammoniacal salts. But need we continue to incur this great cost? I reply, no! empathatically, no! When we reflect that, at one public urinary alone, in the town of Nottingham, there is worse than wasted every day the manure that would produce 1,000 pounds of wheat, what quantity of this valuable material must there be lost amongst a population of nearly 100,000 people? If the urine of the United Kingdom were to be economized, need we send to the other hemisphere for guano? I shall endeavour to get some enterprising farmers in our neighbourhood to assist me in my scheme, which I shall lay before the town council as soon as I have obtained sufficient evidence to make out a good case. Can you give me any ideas or suggestions? My scheme is very simple one. It is merely to construct large tanks in connection with all public urinaries, with a valve to be closed during the daily process of cleansing, which valve will shut out the water, and, when the tank is full, pump out the liquid, and immediately put it on the land or compost heap. I should advise that the tanks be so large that

they would only require to be empted about six times a year; thus the ammoniacal salts would be fit for immediate use.

WM. CHAPMAN.

Nottingham, June 21, 1861.

MY DEAR CHAPMAN,—You are about right in applying to me in regard to the economy of town urine, as, if only for the interest I take in the salubrity of Nottingham, I shall have pleasure in devoting my next 'Practical Paper' to the question at large; and will, in a few days, probably be able to send you a proof. Meanwhile, I throw out a few hints for your satisfaction and guidance.

No doubt, urine is valuable; but, like every other manure known in agriculture, all its practicul value depends upon its management. In the case of Peruvian guano, the base of which is a urate, accident has supplied apparently the most effective means of enhancing the value of the manure by so disposing it *in situ* and saturating it with the salts and liquid exudations of decomposing matter, as to economise most perfectly its ammoniacal properties for fertilizing the earth. And I must confess that the readiest mode of dealing with the urine of the farm-yard at home seems to me to be that which I have recommended in the first of my 'Practical Papers for Farmers' Clubs'—to keep pumping it over the dung heap.

I am however, aware of one instance in which a very valuable manure based on urate, or altogether one, was manufactured by Messrs. Tennant and Co., of St. Rollox, Glasgow, and employed with immense advantage by that very eminent and strictly practical farmer, the late Mr. John Finnie, of Swanston, Edinburgh.

This salt, which I suppose is still made and sold by Messrs. Tennant, is produced I believe, by digesting the urine in a tank with other substances, and Mr. Finnie found his advantage in being able to substitute this production at £5 a ton for Peruvian guano at £12.

The great difficulty in the way of Nottingham would be in using up the fresh urine. There is no exception of which I am aware to the law of prior decomposition in the action of agricultural stimulants. The decomposition may be volatile, or it may be percipitant; the manurial substance may have a tendency to go off into aerial gases, or to subdue into liquid putrefaction; but decomposition in some sort must ensue before any manurial value accrues. Now, the great value of urine arises from its rapid capacity of putrefaction, owing not only to the amount of ammonial salts which it holds in solution, but to the quantities of animal matter it retains in mechanical suspension. To prevent the participaion of the latter, agitators must be kept at work in the tank or receptacle where the urine must be kept for preservation; so that you are met by a difficulty at the very outset; for if you would expect a farmer to take off the liquid manure, you must necessarily save and husband it for him in the first instance. But farmers will not readily be induced to take off the supply. I do not think you are likely to meet with even one so disposed; for most farmers find it more to their purpose to copy experiments that have already proved successful (and this, indeed, they are willing and ready to do) than to embark in doubtful attempts, however clear they might feel convinced of their scientific accuracy.

It seems to me, then, that whenever there might arise an opportunity for a corporation or other public body, showing what could be done to convert the national waste into productive value, it might eagerly be embraced upon public grounds. And then, when the salvage of urinary and excrementitious matter had become in this country as much a part of our fertilizing economy as in Flanders and in China, the agriculturists would catch the spirit of the movement, which I feel satisfied might thus be introduced, and would thenceforth save the sanitary bodies throughout the kingdom all anxiety respecting the cost of economising the civic voidings.

But what means are to be adopted of preserving the liquid exudations pure? I have a wholesome recollection of having been worsted long ago whilst conducting the *The Agricultural Journal*, by Dr. Skae, of the Royal Lunatic Asylum at Morningside, whom I had accused of polluting the stream of the Jordan (a river resembling the Leen), and wasting much fertilising matter, by running off into it the sewage of 600 inmates. In reply, the doctor certified and sent me a jar of the water. I had it analysed by Dr. Anderson, the Highland and Agricultural Society's distingushed chemist, and it prov- to appearance valueless, being, of course, much diluted; although as pure water fertilises, this might not in the result have greatly affected the efficacy of the sewage applied as liquid manure. Your Nottingham urine must necessarily to some extent be collected in a diluted state, as, of course, you have to keep the urinaries sweet, as at the principal railway stations, by the constant tickling of the fresh water, which we will assume dilutes the urine to half its extent or weight with water. If there were more water than urine, the weights would be however, about equal, owing to the difference of specific gravity. You are to take this fact into account, then, in estimating, by quantity, the value of the urine so collected; and besides it must be remembered that although 2,000 visits may be paid to the urinaries during the day, these are not to be reckoned as the yield of 2,000 individuals. On the whole, I do not suppose that more actual urine would be caught for economical purposes than might have been derived from the 600 individuals at Morningside.

Well, but how are you to conserve and apply it? A pipe and a reservoir appear utterly indispensable if this is to be done; and then the question becomes one of expense. The plan

have to suggest, however, might turn out self-supporting. But the first question is, where it might be desirable the receptacle should be situated. The fine slope from Albert Gate to the level of the Leen gives the command of the meadows between the Leen and the Trent and betwixt the Trent and the railway, and the liquid could be led thither by gravitation, at no great cost. I am very much afraid that any reservoir with agitators situated at an intermediate distance might be regarded as a nuisance—though not a greater nuisance than the gas works, which are placed upon the outskirts of your population. But as I find that the best mode of applying liquid manure is by the spreading cart, exactly resembling the water-carts in your streets. It seems preferable, therefore, to carry it on to the meadows at once; and, having provided an establishment for the sale of it, in which I would recommend the use of carts, charged so much an hour, and provided by the Board of Health, to be included, you might try whether the tenants and holders of the grass meadows would not come forward in sufficient numbers to take up the supply for the improvement of their glass lands. If not, a certain portion of meadow land sown down with *lolium Italicùm*, the Italian ray-grass, and yield six or seven heavy grass crops early and late in the season, when grass is of double value, would soon repay all outlay. When I will tell you that the Figgate Whins, near Edinburgh, which once rented for half-a-crown an acre, now bring £20, £30, and this year the incredible sum of £40 per acre, owing to the city sewage, you may imagine what margin there would be for trying all this with safety. You may feel surprised that sin e I suggest the urine being led down to the meadows. I do not adopt Mr. Mechi's expedient of branch tube hydrants for laying it on direct to the land. You will bear in mind, however, what I have hinted of the necessity for stagnation (if stagnation it can be called with agitators going), putrefaction, which redoubles, indeed, the manurial value; and besides this, I found that Mr. Huxtable, on his celebrated Dorsetshire farm, had abandoned the use of hydrants (which are still in his fields), except for loading the liquid manure carts; for, as he says, you never know what you are doing, and which bit is watered and which not, when throwing it in showers; but by means of the cart, one cart loading while another is dispersing, you can measure exactly what you see when a stetch of land is saturated, and distribute equally.

With kind regards, yours truly,

W. Wallace Fyfe.

Charminster, near Dorchester, June 24, 1861.

Beet-root Sugar.

Editors Canadian Agriculturist. Gentlemen—I have a small piece of White Beet under cultivation and shall feel obliged if any of your correspondents will describe the process of conversion into syrup and sugar. Are the roots materially injured by being taken up some time before used? I am Gentlemen,

Your Obedt. Servant,

Briar.

If any of our readers have experience in making sugar from beet we shall be glad to publish their mode of performing the operation. It is seldom done, we believe, on so small a scale as to meet the case of our correspondent, and we doubt whether, within such small limits, it could be made profitable. In some European countries, France in particular, the manufacturing of sugar from Beet-root is carried on in extensive establishments; but even then the manufacturer cannot compete with cane grown sugar, when the latter is at a moderate price. We should think that the roots would not be materially injured by being taken up a considerable time before they are used, if they are properly stored, so as to protect them thoroughly from the effects of heating in the lump, and from frost. Eds.

Agricultural Intelligence.

Universal Exhibition

OF MOWING-MACHINE, HAY MAKERS, HORSE-HARROWS, WAGGONS, AND HAND INSTRUMENTS FOR THE HAY HARVEST, HELD IN THE HARRLEMMERMEER POLDER, BY THE DUTCH SOCIETY OF AGRICULTURE, ON THE 28th AND 29th OF JUNE, 1861.

From the Weekblad Van Haarlemmermeer.

It was a good notion, that of renewing this year the exhibition of mowing machines, held in 1860 for the first time in the Netherlands. It showed, it is true, that after the lapse of a twelve month there still remained great room for improvement in the construction of the machines; but in order to the wider spread of their reputation it was desirable that this year opportunity should be given to see them in motion. Although it had certainly been pleaded hard that the exhibition should this time be held in the heart of North Holland, in the midst of the rich meadow and hay lands of Beemster, Purmer, and Schermer, it was nevertheless an agreeable proof of the watchful interest of the chief direction in its youngest section to order the exhibition to take place in the Harlemmermeer Polder. And with respect to this *polder*, or drained

marsh, where at this present time some 9,000 bunders (about 4,500 acres) are already reclaimed as grass land, mechanical mowing is a matter of the very highest moment, on account of the deficiency of hands not unfrequently felt in times of pressure.

The favourable arrangements of the direction were in chief part due to the ready concurrence of Baron Verschner, who kindly placed his grounds at the disposal of the committee.

The influx of grass-mowing machines was numerous. Messrs. Keyser and Swertz, as the agents of Burgess and Key, had sent in three: a joint mowing and reaping machine of Burgess and Key, with two horses; one ditto for one horse; and an exclusive grass-mowing machine of the said manufacturers, the same instrument which obtained the first prize last year at Loosduinen. Cranston, of London, had sent one two-horse and one one-horse grass mowing-machine—Wood's system. G. Stout, of Tiel, the machine of Manning, which was tried at Lousduinen last year, and carried off the second prize; and one machine after Wood's system: they were not, however, made by the exhibitor. The "Domaine Privē Royal," of Berg, had also prepared a machine for competition. The model, which last year did not work well, was much improved, particularly in imitation of the one then exhibiting by Burgess and Key, and which gained the prize. Messrs. Gevers, Deynoot, and W. F. Ceshmjsen had sent in their machines without competition. Announcements had been made of the arrival of machines from Mr. O. R. Van Andringa de Kempenaer, and from Messrs. J. Peignat and Co., but they did not make their appearance.

On Friday the trial took place before the committee of judgment and various members of the society appointed for that duty by the chief direction, or admitted for that purpose. On Saturday afternoon the trial was resumed before the members and the general public, on payment of an admission fee of 2 guilders. The whole of the machines did not then work, and but few of them for any length of time or regularly; so that only such persons as were present on the first of those days were enabled to form a complete and settled judgment touching the different merits of machines on trial. We would, therefore, rather wait the report of the committee of judgment than publish a probably ill-grounded opinion of our own. This committee was composed, for the mowing machines, of Messieurs Hœufft van Velsen, Staring, Borgesius, van Waneningen, Kakebeeke, and Cotz.

The decision as to the prizes was to this effect:

First prize of 250 guilders to the joint grass-mowing and reaping machine of Burgess and Key, on Allen's system, for two horses, exhibited by Messrs. Keyser and Swertz.

Second prize of 200 guilders to the grass-mowing machine on Wood's system, for the two horses. As two of these machines were exhibited both of which worked equally well, this prize was divided between Messrs. G. Stout, of Tiel, and W. M. Branston, of London.

Third prize of 50 guilders to the joint grass-mowing and reaping machine of Burgess and Key, for one horse, exhibited by Messrs. Keyzer and Swertz.

Messrs. Burgess aad Key, therefore take precedence, precisely as they did last year.

The Royal Irish Agricultural Show at Belfast.

We had intended giving a report of the Exhibition, condensed from our excellent contemporary, the *Irish Farmer's Gazette*. That paper, however, unfortunately got mislaid, and we subjoin some account of the Belfast Show from the *London Farmer's Gazette*. The improvement which agriculture is making in Ireland is truly encouraging, and it is pleasing to see so many unmistakeable signs that that formerly oppressed and unhappy portion of the United Kingdom is rapidly taking a foremost position, both in agriculture and the industrial arts generally.

The energy and intelligence of the northern province of Ireland had been called into requisition at this year's meeting of the Royal Agricultural Society of Ireland. It is needless to institute comparisons which affect provincialism, and which would only lead to no useful result. We have followed Royal shows in their itinerant progress through the various provinces of Ireland. We have watched their influence, and more especially the enthusiasm and public spirit which they have excited. We have seen more excitement among the warm Southerners, and more of the glorious rapture of the warm Celt in the West; but on no occasion have we seen that the show was made a more useful means of instruction than at this Royal meeting. We cannot speak with precision though safe in saying we have seen a larger attendance than at Belfast, but at no previous show have we witnessed the prevalence of so large a number of men earnestly bent upon gaining information. And this, after all, might have been expected by those who are conversant with the circumstances of Irish agriculture. In the North there is a race of industrious tenant farmers, whose prosperity has grown with the growth of industrial spirit and industrial enterprise in that province.

For our own part we cannot say the success of the show has at all exceeded our expectations. On the whole, perhaps, our hopes have not been realized. The meeting has, however, been successful and useful; and were the Royal Irish Agricultural Society to enter a little more into

the spirit of modern agricultural progress, and to infuse into its proceedings a little freshness and vigor, and to address itself more to the sympathies and wants of the tenant farmers, of Ireland, we could augur for it a still wider measure of support and success.

Short-horns.—It is impossible that we could in this weeks impression give a full critical re vew of all the points of interest in the exhibition. Our dispatch is forwarded ere some of the prizes are awarded. We will, therefore, give the prize lists as best we can hereafter, and offer a few passing remarks on the Short-horns.

In Section I., Bulls calved after January 1, 1859, it will be seen that Lord Kinnaird won 1st prize with Lord John Russel; the second prize being awarded to Volunteer, the property of Lord Bangor. Volunteer is a little defficient behind the shoulder; handles well, though covered with short hair. Lord John gives a fair elastic touch; and has a better developed flank than his competitor.

In the next section we were not much prepossed in favor of either of the prize animals. Henry the Eighth out of Hopewell has a mellow hide, is a robust two-years old bull, but his legs are rather long. The 2d prize animal in this section, Priam, got by Musician, is a spotted annimal. His touch is not so mellow, nor so silky.

In Section III., Bulls calved on or after 1st January, 1860, Lord Talbot de Malahids gained the 1st prize with Victor Emanuel, which is a very showy animal, nice and pleasing to look at, but there his merits chiefly end. He is light on the breast. We were glad to see a successful Irish breeder, Vicount Monck, once more in that place of distinction to which his judgement and spirit as a breeder of Short-horns entitle him. Adam Bede with which his Lordship wins his laurels on this occasion, is a nice animal, possessing good points, including a good flank, but a little harsh in touch. On the whole this was a good section. There are some exceedingly promising animals, such as Young Edwin, exhibited by Mr. Patteson, of Dundalk, and whose pliable skin indicates health, vigor, and usefulness. Edwin, though out of Booth's Bridesman, commanded no attention from judicial eyes at Belfast.

Of the Bull calf class, little need be said. No "No eye for Short-horns" will dispute the award, though the second prize calf is an animal of promising sweetness.

The Full-grown Cow class justly excited no small amount of attention. Already one of the Royal Irish Cups has crossed the Channel, and forms a monyment of honorable rivolry among the prize plate at Towneley Hall. And on this occasion the example of the renowned breeder of Royal Butterflies is creditably followed by Mr. Eastwood, who we believe is agent to the gallant Colonel. Mr. Eastwood entered three cows, the famous Rosette of Royal Irish renown, and Emma and Faith, the former bred by Colonel Towneley, the latter by Mr. Grundy. Rosette did not put in an appearance, but among such associotes as Mr. Christie's Queen Beauty the Second, Faith won 1st and Emma 2d rank. If we mistake not, Mr. Eastwood's success at the Royat Irish meeting is now crowned with the permanent possession of the Challenge Cup, for which he has so honorably contested.

In Section 7.—Heifers in milk or calf, and calved in 1859—Captain Ball carried away 1st and 2d honors. Faw will deny him the merit of of deserving it. We cannot help admiring the peculiar style in which Mr. Ball shows his animals. Models of symmetry and good breeding, they attract the eye without prize cards, or Royal ribbons. Rochester and Nightingale are old favorites. The former is a sweet animal. The Nightingale, a beautiful white, does not handle so well.

In the next Section, Captain Ball gains still higher laurels His Pride of Adare not only obtains 1st prize, but effectually assists her two placid and stylish associates, Flirtation and Peahen 11th in winning the Waterford Cup, value 100*l*. We must own, however, that the Pride won her position at Belfast, by a neck and neck competition. Mr. Crosbie's Florentine, which stands second is a fine animal, well shaped, not quite equal, it is true, in quality to the Pride, but of more substance. If Florentine's eyes peered out a little brighter from their orbs the contest would, we apprehend be still closer. As it was, one of the most successful Irish Short-horn breeders declared for the Kerry dame.

In conclusion, we have only to remark, that we have heard some of the best stock in Ireland was not exhibited at this meeting; the cause is not explained. It may console those who have held back to know that though their presence would have been acceptable, yet a respectable exhibition can be held without them.

Implements.—The Implement department of the Exhibition was on the whole satisfactory. The enteries were numerous. Many of the leading manufacturers exhibited some of their best constructed implements and machines. There was in short quantity and quality. The most interesting feature connected with this department was the trial of mowing and reaping machines, of ploughs, harrows, &c., which took place on Tuesday at the Knox Station, on the County Down Railway. The mowing machines commenced operations on a field of Clover, a rather light crop. All appeared to do the work in an admirable mannner; But those that attracted the greatest amount of notice were Wood's, Burgess & Key's, and Samuelson's. A few local manufacturers also competed, but were entirely thrown into the shade by these Leviathan exhibitors. The trial of this class of machines would in every way have been more complete, and satisfied the larger number of spectators, had it taken place in a piece of old mea

dow ground. The haymaking machines were then set to ted out the Grass, which was oper ed on by the mowing machines. Smith Brothers' new patent hay-maker deserves particular notice. The machine is entirely on a new principle; all the tines are placed on barrels consecutively in pairs, so that it separates the Grass much better, draught much less, and is never liable to clog.

Simultaneous with the working of the mowing and hay-making machines was the ploughing. This was carried out on a piece of old lea, well suited for the purpose. Gray's ploughs of Uddingston, seemed to take the lead in making cleaner work and packing the furrow slices in a superior manner; but he was ably followed up by his powerful Irish rival in this department, Gray of Belfast, in turning the furrow over at a better angle. If our Belfast friend would adopt the improved construction of the English mouldboard, we have no doubt but that it would make a material improvement in the working of his ploughs.

The principal reaping machines were Burgess & Key's, Buthbert's, Samuelson's, and Wood's. The trial was performed on an Oat crop, pretty heavy, and somewhat lodged. The visitors seemed prepossessed with the Working of Cuthbert's machine, which on the whole did its work well. The others failed to a great extent when cutting with the incline of the crop. It was remarked, however, by some present that the latter machine would not have proved so successful if its working had been in the hands of an inexperienced person. The proprietor, in this case, as in all others, we believe, managed the implement himself.

Experiments with Special Manures and the Conclusions Arrived at.

1st. Every description of crop requires an ingredient essential to its production, and without it such crop cannot be raised in perfection.

2nd. If a soil does not contain in itself what is essential to the growth of the plant upon it, it must be supplied through the medium of one or other of the specific manures.

3rd. The essential substance necessary to be added to the soil may be discovered by consulting the nature and property of the plant to be raised.

4th. Nitrate and ammoniacal substances, except in the production of straw, grass, or potatoes, and turnip tops, without an equivalent production of grain or bulbs; so these substances should not be applied alone, but in combination with others containing phosphates. This is illustrated by the fact that saltpetre refuse and nitrate of soda, applied with guano or prepared night soil and animal charcoal, improve their individual production, either in quality or weight, or in both.

5th. Salts which are sulphates produce grain in larger proportions to their straw than other salts which are nitrate or ammoniacal.

6th. Bone manure, though dissolved in sulphuric acid, may be generally enhanced in value by the addition of ammoniacal substances; hence it is inferred that substances capable of imparting additional luxuriance to the foliage of plants largely administer to their necessities, and, combined with phosphates, are highly advantageous.

7th. Sulphuric acid is eminently beneficial to the potato crop, and in recorded experiments on that crop it has proved itself a preventive of the disease called "cure," having produced a healthy crop, when from the same seed, and otherwise treated in the same manner, the other plants of the field were much infected with that disease.

I am aware that some of these conclusions are mere repetitions of ascertained facts, but truth is never injured by repetition. Perhaps I should have added to the list of my conclusions, this one, that farm manure and guano, combined in the proportion of 15 tons of the former to 3 cwt. of the latter, is the proportion in which I have found these substances to succeed best; and as regards night-soil, the best proportion is 25 tons of the former to 1½ cwt. of the latter. This last result, however, may be greatly improved upon, and therefore should not be taken as a just criterion, either for the purpose of estimating the value of the night-soil or determining the best mode of applying it.

Bone dust was applied nine years ago as manure for a turnip crop, in a field of medium soil, and this field was ploughed this year and sown with oats. The land where the bones had been put gave 7 bushels oats and 50 stones more of straw than the land to which farm-yard manure had been applied at the same time to the turnip crop, besides the grain having been 2 lb. per bushel heavier; and, during the time this field lay in grass, the portion manured with bones could be pointed out from the rest by a darker colour and greater luxuriance of pasture.—*Farmer's Friend.*

Provincial State Shows this Autumn.

Upper Canada	London,	Sept.	24–27
New Brunswich	Sussexbale,	Oct.	1–04
Illinois	Chicago	Sept.	9–13
Ohio	Dayton	"	10–13
New York	Watertown	"	17–20
Kentcky	Louisville	"	17–21
Iowa	Iowa City	"	24–27
Wisconsin	Madison	"	24–28
California	Sacramento	"	16–21
Michigan	Detroit	"	24–27
Minnesota	St. Paul	"	24–27
Oregon	Oregon City,	Oct.	1–04

County and Township Shows.

West Durham Agricultural Society at Newcastle, Oct 4.

South Ontario Ag. Society at Whitby, Sept. 18 and 19.

Fullarton, Logan and Hilbert Society, at Mitchell, Oct. 2.

Russell Co. Society, at Smith's Hotel, Osgoode, Sept. 27.

Hay Township Society, at Rodgerville, Oct. 9.

South Wellington and Guelph Townships, at Guelph, October 10.

In the Counties of Lanark and Renfrew, at Perth, first Tuesday in October.

Lanark, second Tuesday in October.

Smith's Falls, first Friday in October.

Ferguson's Falls, third Tuesday in October.

Carlton Place, first Tuesday in November.

Clayton, second Wednesday in November.

Packenham, second Thursday in October.

Franktown, second Tuesday in October.

Almonte, last Thursday in October.

Sand Point, first Tuesday in October.

Renfrew, second Tuesday in October.

Ross, fourth Tuesday in October.

Pembroke, third Wednesday in October.

Roseville, second Thursday in September.

Arnprior, first Thursday in October.

North Simcoe Society, at Barrie, Sept. 19.

Blenheim Township, Drumbo, Oct. 4.

Norwich Township, Norwichville, Thursday, Oct. 10.

North and South Wentworth and City of Hamilton, United Show at Hamilton, October 9 and 10.

West York and York Township, at Yorkville, October 22 and 23.

East York and Markham Township, at Unionville, Markham, Oct. 9.

Ancaster Township, at Ancaster, Oct. 3.

Peel County, at Brampton, 17 and 18 Sept.

City of Toronto Elec. Div. Society, and Toronto Mechanics' Institute, Union Exhibition, commencing Oct. 7, and to continue for two weeks.

North Oxford and Ingersoll, at Ingersoll October 9.

Eramosa Township, at Jones' Inn, Eramosa, October 8.

Erin Township, Erin Village, Wednesday, Oct. 16.

Woolich Township, at Conestoga, Tuesday, Oct. 8.

North Leeds and Grenville, Frankville, Wednesday, Oct. 5.

South Simcoe, at Bradford, Thurday, Oct. 3.

Bayham Township, at Staffordville, Saturday, Oct. 15.

West Gwillimbury, at Middleton, Thursday, Oct. 10.

Northumberland West, at Cobourg, Wednesday, Oct. 16.

King Township, at Bowmanville, Oct. 11

Whitby Township; at Oshawa, Thursday, October 17th.

Oro Township, Bell's Tavern, Penetanguishene Road, October 3rd.

[Secretaries of Agricultural Societies will oblige us by informing us of the days on which their shows are to take place.—Eds.]

Horticultural.

Toronto Horticultural Society.

THIRD EXHIBITION.

The third exhibition of the season, under the auspices of the Toronto Horticultural Society, was held yesterday afternoon in the Botanical Gardens, Gerrard Street, and attracted a very large and fashionable attendance of visitors. The flowers, fruits, and vegetables were exhibited in a mammoth tent erected at the head of the gardens, and everyone was of opinion that the Fall Exhibition this year was superior to that of any previous year. Every season, new and rare plants and flowers are introduced, and the Exhibitions of the Society, as they deserve to be, are decidedly popular. The centre tables were appropriated for flowers, and presented a most brilliant appearance, the colors harmonizing beautifully. There was a fine display of Phloxes, and Mr. John Gray, Lake View Nurseries carried off the first prize, and Mr. George Lesslie the second. One of the great attractions for the visitors, however, was the large assortment of beautiful Dahlias. In this department, Mr. George Lesslie, Mr. Fleming, and Mr. Eccles were the principal exhibitors. The first-named gentleman carried off both the first and second prizes. Mr. John Gray exhibited some very fine double Petunias. new varieties, and newly imported into Canada. They were universally admired, but the judges awarded the first prize to Mr. Gzowski for single varieties, Mr. Gray obtaining the second prize. In Verbenas Mr. Forsyth, Normal School, Mr. S. Heward, Mr. T. Tilman, and Mr. Gray, were the principal exhibitors. The latter gentleman had on view twenty-four varieties, (named,) all newly imported. Mr. W. H Boulton showed a few good specimens of foliage plants, and also some fine Cockcombs. In Achimenes, Mr Gzowski and Mr. W. H. Boulton were competitors, the specimens shown by each being very fine. The display of Greenhouse plants was not large, and there were few competitors in this department. Judge Harrison carried of the first prize, and Hon. J. C. Morrison the second prize. Mr. Morrison also exhibited a very pretty stove Orchis, growing in moss, which was highly commended. Mr. J. Fleming had on view three varieties of the Gladiolus, a very showy and handsome plant, which attracted much attention. In Annuals Mr.

Forsyth, of the Normal School, bore away the palm. There was a good display of beautifully arranged hand and table bouquets.

FRUIT.

In this department the fine display of grapes requires to be first mentioned, and certainly finer grown grapes were never shown in Canada than those on exhibition yesterday. Crowds of persons lingered near them for hours, and all saw something to praise. The clusters were large and luscious. Three bunches belonging to Mr. H. Eccles weighed in the aggregate no less than 121 oz. Hon. Mr. Cayley exhibited five varieties grown in a cold grapery, the clusters weighing from 32½ oz. to 47¼ oz. Mr. C. S. Gzowski carried off the Vice President's medal for eleven varieties, while Judge Harrison and Mr. W. H. Boulton exhibited specimens which were greatly admired. Near the middle of the centre table was a very fine grape vine in a pot with six large clusters, and was from the nursery of Mr. John Gray. Hon. J. C. Morrison also exhibited a handsome grape vine in a pot. The display on the tables gave ample proof that all kinds of grapes can be profitably cultivated in Canada. The number of peaches was not very large, and those exhibited by Judge Harrison, and Mr. D. L. Macpherson presented a fine appearance and gained the prizes. Mr. W. H. Boulton and Judge Harrison were the principal exhibitors of nectarines, while some beautifnl plants were shown by Rev Edmund Baldwin and Mr. H. Eccles. There were many varieties of apples on the tables, but none of them calling for special mention. The pears were fully up to those of last year. Mr. John Gray, Hon. Mr. Allan, and Mr. R. Stibbard excelled in this department.

VEGETABLES.

While great attention appeared to have been paid to fruits and flowers, the tables yesterday gave ample evidence that the kitchen garden had not been neglected; and, although a pretty young lady asked her mamma, "Who would be so vulgar as to look at onions?" the visitors gave much attention to the vegetable department. On the tables were a very fine collection of mammoth cabbages, turnips, onions, potatoes, beets, cauliflowers, tomatoes, sweet corn, vegetable marrow, celery, parsnips, and salsify, and, as usual, there was a large number of exhibitors. In potatoes, Mr. C. S. Gzowski gained the first prize, and Mr. Tattl the second. In cabbages, Mr. Wm. Burgess was the successful competitor, while Mr. T. Tillman gained the prizes for red cabbages. Mr. Edward Lewis, and Mr. Tattle showed some very fine cauliflowers, and the last named gentleman also exhibited a few large specimens of beets and tomatoes. The onions belonging to Mr. George Vear were awarded the first prize, as was also the sweet corn belonging to Mr. E. Lewis, and the large vegetable marrows exhibited by Mr. H. Eccles. The Judges in almost every department appeared to have considerable difficulty in giving their decisions, owing, no doubt, to the excellence of the various specimens exhibited.

The splendid band of the 30th Regiment was in attendance in the pavillion from four in the afternoon till half-past six o'clock in the evening, and performed the following well selected programme, under the able leadership of Mr. Weston, Band Master:—

March—
Overture, "Masaniello"—*Auber.*
Waltzes, "Donna Julia"—*Laurent.*
Selections, "Bianca"—*Balfe.*
Galop, "Submarine"—*D'Albert.*
Selections, "Atilla"—*Verdi.*
Quadrilles, "Zurich"—*D Albert.*
Overtures, "Stradella"—*Flotow.*
Mazurka, "Jager"— ———
Selection, "La Traviata"—*Verdi.*
Waltzes, "Queen of the West"—*Coots.*
Galop. "Leviathan"—*D'Albert.*
"God Save the Qneen."

During the performance of the several pieces the visitors assembled in the pavillion or promenaded in the grounds, which, at the present time, present a most beautiful appearance. Taken as a whole the Exhibition may be pronounced one of the most successful of the many given under the auspices of this well-managed and popular Society. The weather was all that could be desired.—*Globe.*

Asparagus.

To the Editors of Agriculturist.—Will some one of your able and respected Horticultural correspondents be kind enough to answer the following questions, regarding the required treatment of the above valuable vegetable?—

Is it necessary that the stalks of the above root should remain on till they wither, and the balls of the seed turn red, before they are cut down?—or will the root suffer if the stems and seeds are cut whilst quite green? Beds 3 and 4 years old, and plants very luxuriant.

Also, *how late* in the fall may it be safe and judicious to pull old beds to pieces, and transplant the roots into new ones?

Respectfully yours,

A Subscriber.

Co. Wellington, Sept. 13th, 1861.

[We shall be obliged if some of our horticultural readers will furnish us with an article on the culture of Asparagus generally. The usual practice of allowing the stalks to get yellow before cutting them off, is no doubt well founded, for if cut green the stock would in some degree

become weakened, as a fresh effort of growth would commence. October is soon enough for cutting and manuring the beds. Autumn planting of Asparagus is not to be commended, as severe winters are likely to affect the roots Spring is by far the best time for making new beds;—taking care to have all the needful preparations completed as early as the season will admit.—Ed.]

Buying and Planting Fruit Trees.

The subjoined communication is appropriate to the season. The time for fall planting of apple and other fruit, as well as ornamental deciduous trees will arrive in a few weeks. When farmers or others incur the expense and labor of purchasing and setting out trees they ought to take some little care that the trees are of a good kind, of sound growth, and adopted to the climate in which they are expected to live. In this connection, we are well informed that since a great check has been given to the nursery business in the United States by the unfortunate state of politics there prevailing, large numbers of agents have perambulated this Province in nearly all directions asking for orders in this branch of business. This would not be so very bad, if these agents were really what they pretend to be, the employees of respectable nurseries. But in fact many, if not the most of them, are mere speculators, who take the orders at high prices, and afterwards purchase the trees for their customers any where he can get them at cheap rate, without caring whether they are likely to grow, or whether they are the kinds they profess to be or not. Some of these pretended Agents represent themselves as the employes of Canadian nurseries, such nurseries in not a few cases existing only in the fertile imagination, or the showy placards of the agent. We have actually seen handsomely printed catalogues, probably representing some genuine nursery in the United States, which by the ingenious device of merely printing a new outside cover for them were made to duty for some flourishing Canadian nursery, in some well known township, such nursery as before said having no real existence at all.

However, the orders taken and the purchaser supplied by cheap and unreliable importations from abroad as in the other cases. It should be recollected also that many of the trees produced in the Rochester and adjoining nurseries were intended for the southern market, and although they may be very good for that purpose, they are not equally adopted to a colder and more northern climate, where in consequence of the southern market being closed to them, they are now liable to be brought in large numbers at a cheap rate.

We think there are several good reasons for resorting to our own Canadian nurseries, when the article desired can be obtained, rather than to those out in the country. We have many respectable nurserymen in Canada, from whom trees that may be relied upon can be obtained. We need only mention here Messrs. Leslie and Grey, of Toronto, Beadle, of St. Catherines, Bruce and Murray, of Hamilton, Lovekin, of Newcastle, Arnold of Paris; but their are doubtless many others whose names do not now occur to us. However, if any person intending to plant trees, prefers applying to foreign nursery, we should recommend sending the orders direct to some well known respectacle establishment rather than to trust to perambulating agents.

Setting out Fruit Trees.

Editor of Agriculturist.—As the time approaches, when persons having orchards and gardens may be desirous of obtaining fresh supsupplies of fruit trees, will you allow me through the medium of your paper, to say a word of caution to the public with regard to the parties from whom they purchased.

In this neighborhood we have suflered much disappointment, through the impositions practised by men representing themselves as accredited agents of respectable Nursery Establishments in the States, but who doubtless had assumed the post with authority, as it cannot be possible that any upright establishment could send out such trash under false labels as they disposed of. Latterly, experience has rendered us more guarded, and we have found perfect satisfaction in our dealings with Dr. Beadle, whose Nurseries are near St. Catharines. His agents are all intelligent, respectable young men, most pains-taking in attending to orders. His trees plants, &c., well grown and vigorous, true to their labels, carefully packed, and punctually delivered on very moderate terms, and heartily do we wish our accommodating and honest friend every success.

Yours very truly,
Thos. Greene.

The Dairy.

Milk.

We might fairly expect that milk would be exceedingly rich in nourishing materials, since it is the first food tasted by all ranks of mamalian animals, and the food upon which they make most progress in the shortest time. The constitf uents of milk are much the same in all species os mammalian animals, the difference in the qualities of milk depending on slight differences in the proportions of the constituents. A cow's milk

is that almost exclusively employed in the country for the preparation of the dairy produce the following remarks apply more particularly to this kind of milk. We shall better understand these remarks by first observing the general composition of milk, which may be represented as follows:—

COMPOSITION OF MILK.

	Cow's Milk.	Ass's Milk.	Human Milk.	Cream.
Water.....	87.04	91.65	88.80	62.50
Caseine.....	4.26	1.80	3.82	5.62
Butter.....	3.13	1.12	3.04	30.58
Sugar.....	4.77	5.03	4.20	trace.
Mm. constituents	.80	.40	.14	1.30
	100 00	100.00	100.00	10-000

It is the fat or butter of milk that imparts its characteristic white, opaque appearance. The fat occurs in a multitude of little globules, which, distributed throughout the substance of the fluid, gives rise to its peculiar white colour The fat-globules being slightly lighter than the fluid in which they float, slowly rise to the surface on standing, and form a layer, more or less thick, which we call the cream. By suitable means the whole of the fat-globules can be removed, and a transparent liquid obtained, which contains all the other constituents of the milk. It is often supposed that the cream is not the essential part of the milk, and we hear of its being given to children in the belief that it is a kind of concentrated milk of superior nutritive value. This, however, is not the case; cream is only rich in fatty substances, and its use in our system is much the same as is performed by the fat of meat. Indeed, we may say, that cream or the butter is to milk what fat is to meat—viz., that portion which furnishes respiratory material.—We may, however, regard it as a superior and more highly-organized kind of fat, since it approaches more nearly to the kind of fat occurring in our own bodies. The market prices of new and skim milk are quite disproportionate to the relative nutritive value; since the latter, having lost nothing but its cream (a material for which other substances could be easily substituted) is but little inferior in point of feeding qualities to new milk; and where, as in many country districts skim milk, of better quality than that frequently supplied in town as new, can be had for a halfpenny a quart, a more extended use of it amongst poor persons would be greatly to their advantage. In milk from which the cream has been removed, the other constituents may be separated as follows:—On the addition of a few drops of hydrochloric acid, or of vinegar, the caseine, or cheesy matter, separates in flocculent masses. When this is removed by straining, we have left in solution the sugar and the greatest part of the mineral salts, which may be obtained by evaporation, or boiling off the liquid in a water bath until it dries up, The caseine is, perhaps, the most interesting of the above-named constituents of milk. Caseine is one of the group of plastic elements already spoken of as the flesh-forming materials of food. It resembles very closely, in its chemical properties, the gluten of grain, or the fibrine of flesh. We have also mentioned the close relation that exists between the caseine of milk and the vegetable caseine of peas, beans, and other leguminous products. The mineral elements of milk are exceedingly rich in phosphoric acid, a substance especially necessary in the developement of the bones of the young animal it is intended to feed, with the other salts of food.—*Gibbon's Every-Day Chemistry.*

The Royal Dairy, Frogmore, Windsor

A new dairy has been constructed at Frogmore, near the lodge, for her Majesty and the Prince Consort. It stands upon the site of an old cottage, and contiguous to the Royal Aviary and Model Farm. The dimensions within the walls are 37 feet 7 inches long, 23 feet wide, by about 23 feet high to the flat of the ceiling. The walls to the spring of the sloping part are 15 feet high. The length is divided into four bays, and the breadth into three bays, by six columns of an octagonal form, made of timber, as is all the frame work, neatly coloured, decorated, and enamelled. The capitals of the columns are carved, and enriched with colour. The walls are surrounded with white marble tables, supported on marble shafts, inlaid with English and Belgian marble. Beneath these are reservoirs of a bluish encaustic tile; these reservoirs are to contain a flowing stream of cold water. The walls are lined with tiles of a delicate tint and pattern, surrounded with a green border. There are ten windows, each filled with stained glass, carrying a border composed of the may-blossom, daisies, buttercups, primroses, &c. Opposite the windows, on the side, are slight recesses, made to correspond in richness. Between these, and between the windows, are delicate bas-reliefs in majolica, of agriculture subjects, and the four seasons. Below these bas-reliefs are a border of richly coloured tiles, which continues round the heads of the windows and recesses. Above this is an elegant frieze in majolica, having a rich scroll pattern with medallions, containing portraits of her Majesty the Queen, H.R.H. Prince Albert, and the whole of the Royal Family, at equal distances, and relieved by shields, with monograms. The ceiling above the cornice is painted with a delicately-pencilled pattern, enamelled, to correspond with the frame work. There are two fountains, one at each end of the room, in majolica ware, of similar design, composed of a large shell supported by a heron and bulrushes. In this shell rises a Triton, supporting another

but smaller shell, from which issues the jet of water In a niche in the wall opposite to the window is a little figure in marble, holding a vase, from which flows a stream of water into a majolica basin. The whole of the floor is laid with encaustic tiles of a rich pattern. The flat of the ceiling is filled with compartments of perforated majolica tiles, for ventilation. This charming apartment owes much of its elegance to valuable suggestions from her Majesty and the Prince Consort during its progress. To Mr. John Thomas, of Alpha-road, are due the design and decorations. Messrs. Minton were the manufacturers of the majolica ware and tiles. The ventilation was the work of Mr. Watson, of Halifax. The whole has been carried out under the careful superintendence of Mr. Turnbull, of Windsor Castle—*Builder.*

Song of the Dublin Dairyman.

They may boast of Ayrshires, and Jerseys and Kerries,
And brag how good each of them is for the pail;
But I'll tell you what, boys, it's all bosh, and there is
No cow like the cow with the good iron tail.

In winter and summer, at all times she's ready;
Though others go dry, her supplies never fail;
No turnips nor oilcake, no hay needs that lady
Who stands in our yard with her old iron tail.

Teetotallers tell us there's nothing like water—
That it's better than whisky, or porter, or ale:
That the more we drink of it, the more we'll get fatter;
So, hurrah! for the cow with the good iron tail;

Then sure they can't blame when we follow their practice,
When we go to the pump to help out our sale;
So good people believe me, I tell you the fact is
No cow's like the cow with the old iron tail.

She's both meat and drink to myself and the childer;
She's fed us and clothed us; of rent paid each gale;
But yourselves I would bother, your noddles bewilder
If I told all she's done with her old iron tail.

General Chorus, with grand accompaniment on empty milk cans.

Hurrah for the cow with the iron tail?
Good luck to the cow with the iron tail!
Though others go dry, the supplies never fail
From that wonderful cow with the iron tail!

Veterinary.

The Horse.

The history of the horse spans the distance between remote epochs. He has seen many changes come over the face of the earth, and his enduring powers have experienced without injury mutations of temperature that have destroyed other genera, or driven them to warmer latitudes. In nearly every region of the world, and at various depths of the earths' surface, his bones are found with strange and diverse bedfellows. In Polar ice, with the Siberian mammoth; in the mountains of the Himmalaya and the caverns of Ireland; in the caves of [illegible] the elephant, rhinoceros, tiger and hyena; in Sevion at Argenteuil, with the mastodon; in Val d'Arno and on the borders of the Rhine, amid colossal urns, he has taken his long rest. His grave is everywhere, and everywhere also his share of usefulness. The friend and servant of man under an infinite variety of conditions and circumstances, he takes part in the achievements and glory of his master. In honor and dishonor, triumph and defeat, delicately tended at Newmarket or munching a scant meal on the roadside, winning the Derby or drawing a dust-cart, dying on the field of battle or surrendering his life a needless victim to science under the cruel knives of the veterinary professor at Alfort and Lyons, who demonstrate equine anatomy to their pupils, twice a week for seven hours a day, by the interesting process of *vivisection*—the noble brute offers many affecting points of resemblance to the chequered lot of his tyrant.

The Emperor Caligula treated him worthily, creating him a high priest and consul, assigning him a marble palace, and decking him with rare pearls and the costliest garniture that the entire Roman Empire could furnish. Lord Byron would fain have had his bear the recipient of the highest academic distinctions of Cambridge; in the last century an English gentleman did actually seduce the authorities of a German University into conferring an M.D. degree on his dog Ponto; but we are not aware that any modern enthusiast has reduced Caligula's cynical affection for his steed. The creature has not, however, been without him in death. Sir Francis Head speaks of our equestrian statues to Charles the First, William the Third, George the Third, George the Fourth, and the Duke of Wellington; but he omits to observe that until recently the equestrian statue was kept in this country, as it is still in some States, as the peculiar honor of Royalty. Alive the horse might serve the most ignoble; but dead, he might be matched only with kings.—*Athenæum.*

Docking and Nicking.

These barbarous methods of depriving the horse of his natural form and appearance, in order to made him conform to the fashion of the time, is, fortunately, very fast going into disuse. If the tail of the horse were given him for no good purpose, and if it were not a design of nature that he should have the power of moving it forcibly to his sides, there might be some excuse for cutting it off, within a few inches of his body, or for separating the muscles at its sides to lessen this power; but, that this is not the case, must be acknowledged by all who have seen how a horse, whose tail has been abridged by "Docking," or weakened by nicking, is annoyed by flies.

If a horse has a trick of throwing dirt on his rider's clothing, this may be prevented by cut-

ting of the hair of the tail, below the end of the bones, as is the custom with hunters in England, where the hair is cut squarely off about eight or ten inches above the hocks.

No apology is offered for not giving here a description of these two operations; they are so barbarous and so senseless, that they are going very rapidly out of fashion, and it is to be hoped that they will ere long have become obsolete, as has the cropping of the ears, formerly so common in England.

A more humane way of setting up the horse's tail, to give him a more stylish appearance, is by simply weighting it for a few hours each day, in the stall, until it attains the desired elevation. This is done by having two pulleys at the top of a stall, one at each side, through which are passed two ropes which come together and are fastened to the tail, the ropes having at their other end weights, (bags of sand or shot are very good for the purpose) which must be light at first, and may be increased from day to day.—The weighting should be continued until the tail has taken a permanent position as desired. It is true that this method requires a somewhat longer time than that of cutting the muscles, but while it is being done the horse is never off his work, and he suffers infinitely less pain.

The method of nicking or pricking, as usually performed in this country, is not quite so cruel nor so hazardous as the cutting of the muscles.—*Herbert's Hints to Horse-Keepers.*

Transactions.

Report on the County of Bruce.

(*Continued from page* 539.)

AGRICULTURAL SOCIETIES.

These are the next institutions that command our attention. There is a county society, with several township branches. They are so much like all others in the county, they need no description. They are all composed of a President, Directors and Members, they pay their subscriptions, obtain the government grant, and divide it as equally among themselves as possible. Now and then there is some grumbling when some party gets rather more than his share, and a successful candidate thinks he might have a few prizes more than are awarded to him. He is very much dissatisfied and threatens to withdraw, but somehow or other he repents before the time for subscribing has expired, and holds on for another year. After the first two or three years every man gets the same prize for the same kind of stock, grain, roots, vegetables, and manufactures, and there is little improvement effected in the practice of agriculture.

At a meeting of the Directors, one time, there was a preposition to apply the funds of the society to purchase a superior bull for use of the members; another proposition was made for the introduction of flax; prizes were offered for the best tilled farm, for the best tilled gardens, but none of these measures resulted very satisfactorily.

That agricultural societies have been of incalculable benefit to the country no one can deny, but the principles of a society that would work very well in the Home and Gore Districts would be but ill suited to a green bush county. But a system could be adopted to suit both. Every Township should be a society of itself, the council should be the board of directors, the funds should be levied by general taxation. Prizes should only be awarded for the working of the soil, such as Draining, Trenching, Subsoiling and Manuring. The competitors should be of two classes, first on a large scale with the plough, second on a small scale with the spade. Seeds of the best kind should be procured for every one that required them, and that would be every one in the Township, for when they understood that they were paying for them they would take them whether they would sow them or not. In like manner if every one was compelled to contribute funds for the promotion of agriculture they would all endeavour to reap some benefit from it.

But there must be some particular rule laid down for their guidance, some established principle that if rightly carried out cannot fail of success. As long as the potato succeeded in Ireland nothing could induce the people to try any thing else in the shape of root crops, and although they had ample warning, they headed it not. In the year 1836 the blight first made its appearance and it was not until 1857 that it reached the roots. Then and then only would they be convinced that the potatoe was not to be depended on, nor was it until millions had died that they were roused to any exertion to provide a substitute. But the people of Ireland are very differently situated from the people of Canada, as every one in Ireland has to rent the land he labours for the very highest price the landlord can obtain for it, and that varies from $5 to $25 per acre per annum, exclusive of other taxes. From this you will see that the tenant has but a very scanty subsistence

for himself and family, and that consists or rather did consist of potatoes, oatmeal, sour coarse bread made from the worst of the wheat or barley, with some salt meat, more or less, according to the means of the land holder.

The most that these people could do was to live from year to year, without anything to spare. Then what must their situation be when their only hope was swept away at one swoop. The landowners were first applied to, but they were in a very little better condition themselves. Those that had the means fled to America, and those that had nothing remained to die of either famine or disease.

The government, as soon as they were convinced of the state of affairs, lost no time in rendering assistance in the shape of loans of money, to be expended in draining, and improving lands. Root crops were cultivated, and carrots, parsnips, turnips, and mangel wurzel were grown by people that would as soon have thought of growing lemons or oranges three years previously. In the year 1836 turnips were scarcer than apples: none but estated gentry would attempt to cultivate them, such as had £2000 or £3000 a year.

The reason the Irish peasant does not like to try experiments is this: he is ruined if they fail, and as long as the article that he is acquainted with does, he is enclined to let well enough alone. On the green and root crop system he can do more on 10 acres than he could on 20 before, even when the potato suceeded to his utmost wishes. On 10 acres of land of average fertility the tenant can keep 3 cows, 1 brood mare, and fatten 18 cwt. of pork on the same ground on the old system 2 cows, 1 horse, and 8 cwt. of pork was all that could be kept in it.

Now at this present time the gentry are working heaven and earth to get every one to sow flax, as Great Britain pays over £3,000,000 sterling per annum for flax, hemp, and seeds, to foreign nations. This in time of peace, is enormous, and what would it be in war, when the demand is infinitely greater and the supplies altogether stopped.

The Canadian, in like manner, while the wheat crop flourished, would think of nothing else. The native might make a little potash, but this the old countryman, unless he is near those that can give good assistance and advice is sure to run himself at. But the wheat crop is sure to fail, as well as the potatoe, if it is pressed too hard, and sown too often in the same ground without manure. It is true this year there are a good many turnips grown, but that is because people were terrified about the grain crop as well as the hay. But there are no root houses for their reception, and there is no doubt large quantities will be frozen, and, if they are not frozen in the pits, the house, the cattle are kept in are so open that they would be partly frozen while stored in them, and from this the old settler would consider that turnips are not the things for Canada.

But, it is not so; there is no country in the world better adapted for the growth of root and green crops than this. Our winter frosts are better pulverizers than all the instruments and implements that ever were turned out of all the mechine shops in England. When our land is properly drained the small seeds can be sown as soon as the frost leaves the ground, and that will be three weeks earlier than in undrained land. Parsnips, carrots, mangels can be sown any time after the ground softens; in sand especially, when sown early in the spring, they keep hold of the moisture all the season, which is a strong reason for sowing sandy land with plants having long roots. No one ever saw mulleions or burdocks fail yet, in the driest year that ever occured. Every thing with the same length of root will thrive equally well. Then there is the sun to scourge the weeds, cut them off to-day and by this time to-morrow you will not know that such a thing had ever existed. The parsnip should be the staple root of Canada; no heat can injure it while growing, and the hardest frost only improves it, they can be grown to any size with the help of deep digging and manuring. Seventy-five bushels of parsnips are worth 100 bushel of potatoes for feeding purposes, and then there is the advantage of labor. The root crops are in the first of April. Peas, wheat, and oats, between April and the first week in May. Flax, second week in May. Weeding and sowing turnips first two weeks in June. Cutting hay and weeding the two last weeks of July. Haying, weeding, and cutting fall wheat and peas, pulling flax and harvesting spring grain August and September. Manuring and sowing fall wheat, October. Trenching and taking up the tenderest roots November; finishing the roots, December, this month and the next are mostly spent at short jobs; the flax should be cleaned in February; March, manuring and preparing for spring grain. But many

will ask what will you do with all this stuff you propose raising? you can't sell roots or vegetables to any amount in this country, Granted, but you can fatten beef, pork, geese, turkeys, ducks, and fowls. You can send them to any of the provincial markets, and after a little while you can send them to England, where they fatten all the beef on turnips and oil cake. If every farmer in Canada was to turn his attention to stall feeding, and flax and hemp growing, our railroads and ocean steamers would pay the best of any in the world, after a little time they would take freight, dead and alive, with no more trouble to the producer than taking it to the railway depot, and directing it to where he wishes to have it sold, just the same as if he were living in Ireland or Scotland.

There is another feature in this kind of cultivation. Any one enjoying average health from seven years old to seventy, can be of use. The inmates of all the poor houses in the United Kingdom could be sent out with advantage to all parties. The second year after this system became generally practised, one acre of flax and hemp to every hundred occupied in Upper Canada, would produce the quantity required by Great Britain; and this much would in no wise interfere with the growing of wheat. The only opposition set up against flax growing is the want of machinery to clear it. This, I think, could be very easily supplied. The breaking and scutching apparatus, I am told, are very simple, and both could be driven by the horse power of a threshing machine. Motion is all that is wanted; power is only a secondary consideration.

If the Government, or Crown Lands Department, would furnish seed to the settlers on unpaid lands, and in a manner compel them to sow an acre of flax or hemp to every hundred they held, and protect it from seizure for any debt, past, present, or future, excepting arrears on the land, there would not be an unoccupied lot but would be paid for inside of five years.

The land in this county is admirably adapted to the growth of flax. The townships of Huron, Kincardine, Bruce, Saugeen, are composed of the following kinds of soil. Along the lake shore it is principally white sand from the water's edge to the high ground, which is erroneously called the clay banks, and which rises from 50 to 100 feet above the level of the lake. These flats extend the full length of the county, sometimes running as far as two miles in from the lake. This land is but seldom tilled. One crop is the most ever taken off it. The practice of burning in the drought of summer is very injurious, as it destroys all the vegetable matter that has accumulated for years. Yet any of it that it is possible to remove the stones off of, would give good crops of flax, hemp, beans, peas, onions, &c., when manured with the marl to be found on the banks above it. Where these flats are composed of the finer sands, they grow roots of extraordinary size, with very little indulgence in the way of other manure and weeding. It is a lamentable fact that the finest manure that ever was applied to land, is only known in this part of Canada by the contemptuous name of "clay," manures that is provided at an expense of $60 per acre in the Old Country, and land possessing it would rent for $15 an acre, when land not near it would not rent for $5. For sand or mucky land there is no manure equal to it. Limestone can likewise be had in any quantity on these shores. This too is sadly neglected as a manure. When you mention it to any one' he will tell you that there is too much lime in the soil already. Now although this may be the case, which I very much doubt, it will not do the crops much good. All raw materials must be prepared before it can be of any perceptible use. On top of this bank the soil varies between a stiff clay and sandy loam in different localities; the marl is within from a foot to eighteen inches of the surface, so that it may be said that it cannot be worn out with proper cultivation. But drained it must be, for the marl is so impervious that if the water cannot run off it, it lies there until the sun and wind dry it up. Between six and eight miles from the lake there is a strip of sandy land from about two miles in breadth. East of that it is a rich clay loam in some parts, and warm limestone gravel in others. All the back townships are of the latter description. On the whole it may be said that marl and lime can be had in abundance in any part of the county. And if every farmer were to underbrush his wild land, clean the surface so that he could rake the leaves every year just before the snow falls, he would have abundance of manure for the clay land. Old rotten logs broken fine, or even sound timber piled so as to rot, would benefit land that can only be ploughed at certain seasons, and there is a great deal of that kind in Canada.

Where the settlers in the County of Bruce are of a mixed kind, they are almost as prosperous as any in the province. Where they have come out from the old country in large numbers it has a very injurious tendency, not because of their indolence or extravagance, but their ignorance of every thing connected with the country. Let any person look at their situation in the country they come from; they are made to believe that if they can provide enough of the very coarsest food and clothing to keep body and soul together, that they should be very thankful. Thus they live from year to year, and day to day, not daring to have an opinion of their own about any thing—true they have but little to have an opinion about, depending on the lords of the soil for what they exist on—till they are sent out to Canada. These emigrants are told that there is every thing waiting for them here that can be desired; if once landed, they will know no more distress, full employment at the highest rate of wages they are sure to get. Now let us see what are the qualifications of these emigrants for high wages. One has never done anything but fish, another is a shepherd, another has never done anything but dig, or thresh with a flail. Few, if any, can do more than one kind of work, and that at a very slow rate.

It is well known, however, that in the Old Country, where labourers are plenty, and farms are large, there is one or two men for every description of work, while in this country one man must do every description of work. Those people arrive in this country by hundreds, and keep together in one body, expecting the work and wages so lavishly promised them before leaving home. Instead of that, very few settlers suffer them in their houses, and in a general way they do not seem to be wanted in the country, except when public works are going on and men exceedingly scarce. Their only resourse is to go to some new country in the heart of the bush, of which they are totally ignorant. They take up a hundred acres of land each, with as much coolness as if they were the grandchildren of those that fought at "Bunker's Hill on the Royalists side," and there they remain, in distress themselves, and a burthen to those who are better acquainted with the nature and necessities of the country. The practice of allowing people fresh from the old country to go right into the bush cannot be too severely censured. Criminals are not allowed to go at large; it has been the complaint of philanthropists that convicts are better fed and clothed than thousands of poor people out of doors. Our penitentaries are held up as models of cleanliness and comfort and if I am rightly informed contribute to the revenue. Now, if an institution like this, that we are obliged to keep, pays its expenses, why should we not have some establishment of a different nature to prepare those destitute and helpless people that are thrown on our shores, in order to qualify and enable them to make a decent and independent living for themselves? There are thousands of acres of wild land in different parts of the provinces where there might be a portion set apart for the reception of such immigrants as choose to go and spend one year without wages, but merely to learn how to do every thing that is required to be done, in improving and working the land in this country. Able bodied men should be chosen as stewards or teachers, for it is only teaching at any rate. The men should be taught to chop, log, split rails, make shingles, build log houses, dig, trench and drain the land, and sow all kinds of seeds and vegetables. The ignorance of the use of vegetables is a sad misfortune to these people. One-fourth of an acre of carrots, parsnips, cabbage, potatoes, and onions, would keep a family of five or six for several months in the year. A stew made of equal quantities of these vegetables, properly seasoned with pepper and salt, and eaten with sweet milk, or butter, in the absence of meat, would make a very palatable and nourishing diet.

The women should be taught to wash, bake, knit, and sew, and all kinds of plain cookery. One year spent in this way with competent teachers, would enable the immigrants to go on land of their own, say, each man a piece of 25 or 50 acres, which should be granted to him, and which he should be compelled to till on the most approved principles, if he did not prefer going to work with a farmer in case he could get employment. Asylums of this kind are sadly wanted at the completion of public works, and the poor about large towns could be sent there in times of scarcity of both food and fuel, where they could be kept far cheaper and more comfortably than they are at the present time. Only by this, or some other system like it, will we ever be able to turn the class of emigrants that stop with us to any account. For soldiers or sailors no finer men than these same

emigrants are to be found in the world, but they don't make either without being trained; and it takes infinitely more training to make a farmer than a soldier, although many do not think so. By this system a township could be settled at once. I do not mean the township set apart for training, but one settled by those that are trained, and able to go on land for themselves. As bad roads are the greatest obstacle the new settler has to contend with, I shall describe a very simple mode of making a very serviceable road, and one durable for a long time. Except 16 or 20 feet in the middle of the road allowance there should not be a stick chopped on it until it was going to be done altogether, then after chopping the width the road was to be, say 21 feet, collect all the brush that can be got within reach, and spread, and chop fine as possible, tread it down close, and cover from a ditch on either side of the road. If the land is very rolling or of a gravelly nature, I need not say the brush is not needed, but where it is of a level or a swampy nature you can't have too much of it. This prescription for road making may provoke the smile of an engineer, but I have seen pieces of roads made in this fashion that lasted for 10 years, and were good in fall when all the rest were impassable.

If our roads are drained, our farms must be drained, and if our farms are not drained neither can our roads, and once more I will say, that without draining, fencing, subsoiling, and manuring, we can never be the great people that orators would try to persuade us we are. To make a great nation, the individuals in it must be wise and industrious.

Miscellaneous.

GIGANTIC SERPENTS.—We have all been accustomed from childhood to regard with awe the enormous serpents of the hot and damp intertropical forests: though the specimens carried about in travelling menageries have but little contributed to nurture the sentiment. A couple of coils of variegated mosiac, looking like a tessellated pavement, about as thick as a lacquey's calf, rolled up in the folds of a blanket at the bottom of a deal box, we had difficulty in accepting as the impersonation of the demon which hung from the branches of an Indian tree, and, having pressed out the life of a buffalo in his mighty folds, and broken his bones, swallowed the body entire, all but the horns. Here again there is incertitude and disappointment; and the colossal dragon, which looms so large in the distance of time and space, grows 'small by degrees and beautifully less' in ratio of its approach to our own times and our own eyes. Yet enough of size and power remains, even when all legitimate deductions are made, to invest the great boa with romantic interest, and to make the inquiry into its real dimensions worthy of prosecution. * * * The old Roman historians report that the army of Attilius Regulus, while attacking Carthage, was assaulted by an enormous serpent, which was destroyed only by the aid of the military engines crushing it with huge stones. The skin of this monster, measuring 120 feet in length, was sent to Rome, and preserved as a trophy in a temple till the Numantine wars Several writers mention the fact, and Pliny speaks of its existence as well known. Dodorous Siculus mentions a serpent which was captured, not without loss of human life, in Egypt, and which was taken to Alexandria; it measured 30 cubits, or about 45 feet in length. Suetonius records that one was exhibited in front of the Comitium at Rome, which was 50 cubits, or 75 feet in length. It is probable that these measurements were all taken from the skin after having been detached from the body. I have had some experience in skinning serpents, and am therefore aware of the extent to which skin, when dragged off by force, is capable of stretching: one-fourth of the entire length may not unfairly be deducted on this account. But even with this allowance, we must admit, unless we regret the testimony of sober historians, who could hardly have been mistaken so grossly as to warrant such rejection, that serpents did exist in ancient times which far exceeded the limits that have fallen under the observation of modern naturalists. There is a well-known picture by Danniell, representing an enormous serpent attacking a boat's crew in of the creeks of the Ganges. It is a graphic scene, said to have been commemorative of a fact. The crew had moored their boat by the edge of the jungle, and, leaving one of the party in charge, had gone into the forest. He lay down under the thwarts, and was soon asleep. During his unconsciousness an enormous python emerged from the jungle, coiled itself around the sleeper, and was in the act of crushing him to death, when his comrades returned. They succeeded in killing the monster, "which was found to measure 62 feet and some inches in length." This seems precise enough; but we should like to know

whether the measurement was made by the Lascars themselves, or by some trust worthy European. A correspondent of the Edinburgh Literary Gazettee has told, with every appearance of life-truth, a thrilling story of an encounter which he had with an enormous boa on the banks of a river in Guiana. Awaked, as he lay in his boat, by the cold touch of something at his feet, he found that the serpent's mouth was in contact with them, preparing, as he persumed, to swallow him feet foremost. In an instant he drew himself up, and, grasping his gun. discharged it full at the reptile's head, which reared into the air with a horrid hiss and terrible contortions, and then, with one stroke of his paddles, shot up the stream beyond reach. On arriving at his friend's house, it was determined to seek the wounded serpent, and several armed negroes were added to the party. They soon found the place where the crushed and bloody reeds told of the recent adventure, and proceeded cautiously to reconnitre. Advancing, thus about 30 yards, alarm was given that the serpent was visible. "We saw through the reeds part of its body coiled up, and part stretched out; but, from their density, the head was invisible. Disturbed, and apparently irritated by our approach, it appeared from its movements to be preparing to attack us. Just as we caught a glimprse of its head we fired, both of us almost at the same moment. It fell, hissing, and rolling in a variety of contortions." Here one of the negroes, taking a circuit, succeeded in hitting the creature a violent blow with a club, which stunned it, and a few more strokes decided the victory. "On measuring it, we found it to be nearly 40 feet in length, and of proportionable thickness." I do not know how far this story is to be relied on; but if it is given in good faith, the serpent was the longest dependable example I know of in modern times. Still, "*nearly* 40 feet" is somewhat indefinite.—*Gosse's*

Relations of the Vegetable and Animal Kingdom.

"There is a ceaseless round of force mutation throughout nature," says the *Cornhill Magazine*, "each one generating or changing into the other. So that force which enters the plant as heat and light, &c., is stored up in its tissues, making them organic. This force, transferred from the plant to the animal in digestion, is given out by its muscles in their decomposition, and produces motion, or by its nerves, and constitutes nervous force—force stored up in the body—resistance to chemical affinity; this force produces directly from the solar rays. The solar rays cause those operations in the vegetable world, by which trees and plants absorb the carbonic acid gas which is expired from the lungs of animals, and by which those very plants also inhale pure oxygen gas during light, to revive the contaminated atmosphere and supply the lungs of man with the breadth of life. Trees and plants are essential to the health of the animal creation, and there is a mutual relationship between the two kingdoms. Respecting these beautiful and mysterious operations of nature, a distinguished writer has given the following literary gem:

The carbonic acid gas with which our breathing fills the air, to-morrow will be speeding north and south, striving to make the tour of the world. The date trees that grow round the fountains of the Nile will drink it in by their leaves; the cedar of Lebanan will take of it to add to the stature; the cocoa nuts of Tahiti will grow riper on it; and the palms and bananas of Japan change it into flowers. The oxygen we are breathing was distilled for us as hort time ago by the magnolias of the Susquehana, and the great trees that skirt the Orinoco and the Amazon; the giant rhododendrons of the Himalayas contribute to it, the roses and myrtles of Cashmere, the cinnamon trees of Ceylon, and forests older than the Flood, buried deep in the heart of Africa, far behind the Mountains of the Moon. The rain which we see descending was thawed for us out of icebergs which have watched the polar star for ages, and lotus-lilies sucked up from the Nile, and exhaled as vapor, the snows that are lying at the top of our hills. Thus we see that the two great kingdoms of nature are made to co-operate in the execution of the same design, each ministering to the other, and preserving that due balance in the constitution of the atmosphere which adapts it to the welfare and activity of every order of things, and which would soon be destroyed were the operations of any one of them to be suspended. And yet man, in his ignorance and his thirst for worldly gain, has done his utmost to destroy this beauetous and harmonious plan. It was evidently the intention of the Creator that animal and vegetable life should everywhere exist together, so that the baneful influence which the former is constantly exercising upon the air, whose purity is so essential to its maintenance, should be counteracted by the latter.

THE GLACIAL THEORY.—On a large scale, for fifty miles along the west coast of Sutherland and Ross, there is a range of isolated mountains, of from 3,000 to 3,500 feet in height, standing widely apart from each other, and yet it is evident they have all, at some time, been part of one continuous formation. The large interspaces having been subsequently formed, the the question is, by what destroying force? and the answer is ice. Ample memorials of its agency exist along the mountain sides, and on the platform of gneiss-rock whereon the mountains rest. These memorials consist of longitudinal hollows, containing lakes, all in the same

direction as the major axes of the hills; and also of smoothings, scratchings, and transported boulders. Hitherto denudations of this kind have been attributed to water in its ordinary state: but it is evident that here (and elsewhere, as we can personally testify) to denude so vastly and so massively, the increased mechanical powers which water derives from congelation are necessary. There is, too, a marked difference between the dilapidations effected by water and those produced by ice. Water leaves all shattered and rough, confusedly scattered, and widely devasted: ice cuts sharply through mountain sides, saws them down, as it were, with its keen-edged scimitar, or wearing and wasting by stone-gatherings, it makes clean work in opening mighty gaps. But an undoubted proof of glacial agency is that blocks are carried up-hill, contrary to gravitation, lifted above their original seats, and left oftentimes, as may be seen in the Welsh Pass of Llanberis, almost toopling over edged eminences, or standing alone, like huge nine-pins, as if they had been set up by sportive Titans, and needed but one Titanic bowl to hurl them down. Water-currents would never effect such transportations upward; whole cataracts could not have moved some of those glacial blocks one yard towards their present position. —*Athenæum.*

Meteoric Stones.—A number of the *Institut* journal supplies us with some recent cases of the fall of these mysterious visitors. At Trenzano, near Brescla, in Lombardy, there fell on the 12th of November, 1856, one which weighed 17lb. At Fort Peter, in the territory of Nebraska, North America, a piece of "meteoric ron," was fonnd in 1858, weighing 30lb.; it was sent to the Academy at St. Louis. The Museum at Austin, the capital of Texas, possesses a mass weighing 320lb., composed of 89.9 of iron and 10,1 nickel; it is an object of superstitious veneration to the Indians. The same museum has a fragment of another aerolite, weighing 12½lb., consisting of 64 parts of iron, 5½ nickel, with traces of cobalt. On the first of May 1860, there was in Ohio actually a shower of acrolites, which fell with violent detonations in the three counties of Guernsey, Harrison, and Belmont. One block weighed 103lb.; several weighed from 40lb. to 60lb., and the weight of the whole was estimated at 700lb. But the most extraordinary of these bodies is one which was found buried in the soil near Rogues River, in Oregon, by John Evans, a gold seeker. Its weight is not given; probably it is still emboded in the earth; but it is said to surpass in size the famous mass of meteoric iron discovered by Pallas in Siberia, which weighed 14,000lb. A fragment of the Oregon aerolite, sent to Boston, was found to contain 10½ per cent. of nickel combined with the iron.

What is Coal?—What is coal in its general signification, composed of? Carbon, hydrogen, oxygen, and a small portion of saline ingredients. What is a piece of wood, or a pine, or a fern composed of? Carbon, hydrogen, oxygen, with water, and a small portion of saline ingredients. Thus, the transition from vegetable to coal appears to consist principally in the loss, in the former, of the water or juices which constitute the sap of the plant, and which no longer living, it requires no more. Borne down by the flood, buried under the coral reef, it slumbers through ages and ages under the continually-increasing pressure, till, its juices being exhausted, its membranes are united in one solid mass, and the gradual process of eremacausis has connected foliage, trunk, and roots into one homogeneous body, undistinguishable to an ordinary observer, from its brother shale, found both above and beneath it in the mine. The point at issue between the scientific arbiters of this question raises our interest and excites our curiosity to know more upon a subject so fraught with mysterious grandeur; and when the distinction between our shales and coals, and other formations of the carboniferous era are more clearly defined, there will still be eager inquiries with each succeeding generation, "What is coal?"—*Once a Week.*

Sagacity of a "Colly" Dog.—That species of the canine, called the sheep or colly dog, is well known for its sagacity, and the following, for which we can vouch, is perhaps without a parallel. One day last week, Mr. Shaw, Achgourish, Kincardine, Abernethy, with his favourite dog "Chance," left for the purpose of what is called "the sheep gathering"—that is, bringing them down to a convenient place to be shorn and washed. They had not proceeded far, when Mr. Shaw, from indisposition, or some other cause, did not feel inclined to go up to the glen, and he told his dog to go away and bring down all the sheep, and that he would await his return. "Chance" instantly obeyed his master's orders, went up the glen, gathered all the sheep together, and came away with them exactly in the direction of his master. We may mention that "Chance's" movements were observed from the top of Craigourie by the hill pundler. Mr. Shaw, who waited patiently the return of his faithful servant, now saw the sheep nearing him to the west of Craigourie, and at this moment observed a hare getting up amongst them, and looking very bewildered. "Chance," taking opportunity of this, left his charge for a little, and took to the chase, and after some stiff work, succeeded in catching the hare. Mr. Shaw called out to the pundler to go and take the hare from the dog. "Chance," anticipating what was to follow, surveyed with suspicion the pundler, who was fast approaching him. Yet not liking to do battle with one with whom he was on intimate terms, instantly threw the hare over his back, as being the easiest mode of carrying, brought with him the sheep with all speed, and

laid the hare at the master's feet. Not later than Friday last the same dog was asked by Mr. Shaw to go and keep the crows out of the potato field. This he did, and in about half an hour returned to the house with a live crow. It is supposed he concealed himself below the stems, and in this way had caught it. We can vouch for the truth of the above. A dog of this kind would certainly be valuable, not only to shepherds, but to agriculturists, and we hope Aehgcurists will preserve the breed. — *Banffshire Journal.*

Salt for Cabbage.—A correspondent of the *Farmer and Gardener* tested the value of salt on cabbages, and with satisfactory results :—After planting them out, he watered them some two or three times a week with a salt water, containing about fifteen grains of salt to the pint. The cabbages grew beautifully, and headed up very finely ; while those which had no salt water given them produced loose, open heads, which were unfit for any other purpose than boiling Rain water was given at the same time, and in the same quantities, as the salt water. He does not know how strong a solution of salt the cabbages would bear without injury, but is fully satisfied that a solution no stronger than that he used is highly beneficial.

Camomile.—In the Irish *Gardener's Magazine*, it is stated not only that a decoction of the leaves of the camomile will destroy insects, but that nothing contributes so much to the health of a garden as a number of the plants dispersed through it. No green house or hot house should be without it in a green or dry state ; either the stalks or flowers will answer. It is a singular fact that if a plant is drooping and apparently dying, in nine cases out of ten it will recover if you place a plant of camomile near it.

Forking Border—This is far better than digging them with a spade, as it injures less the roots of shrubs.—Indeed the fork has nearly superseeded that old emblem of the Gardner's occupation—the spade. A four pronged fork for stiff soils, and a five pronged fork for sandy soils work them quite as thoroughly as the spade, and with the expenditure of much less strength from the workman.

Great Age of a Horse.—Wilkes' *Spirit of the Times* gives an account of a small black Galloway, eleven hands high, which attained to the greatest age of any horse of which we have any record. He was a resident of a small village near Haddington, in Scotland. He was foaled in 1720, and at the time of his death he 69 years old. A few weeks before his death he trotted for several hours at the rate of seven or eight miles an hour, and fed well on his oats and hay to the last.

Gas Lime as a Manure.—At the annual meeting of the Royal North Lancashire Agricultural Society, at Burnley, this subject was discused by several gentlemen and Mr. Baxter stated the result of some experiments he had made with gas lime, and with which he said he was perfectly satisfied. He used from three to four tons per statute acre, and has produced a capital crop of grass with it. Mr. Hunt also expressed himself in favor of the use of gas lime. He believed it was one of the cheapest means they could possibly get, of eradicating the foul herbage, and its was als the means for developing the qualities of the soil.

German Agricultural Society.—An important agricultural movement has recently taken place in Germany, in the formation of a National Agricultural Society, after the plan of the Royal Agricultural Society of England. This is a project which has long been in contemplation, enlisting the support of the leading agriculturists of Austria, Bavaria, Hanover, Saxony Prussia, and of the other German nationalities. Among the means which it proposes to make use of for the attainment of its object—the improvement of German husbanry—are the publication of a journal or periodical; holding successfully in the larger cities of the German Confederation exhibitions, or shows of agricultural stock, produce, and machinery; offering of prizes for scientific, or technical works relating to agriculture, and discussions on special agricultural topics at the extraordinary meetings of the Society. Germany has thus followed the lead of England in this important matter."

British Cooking —John Bull has yet manny secrets to learn in the *ars coquinaria*. In roasting no one can equal him; and as for broiling, it is positively not understood out of these isles ; but he is weak at frying; and as for stewing, it is purely beyond his competence. Boiling, what of it? Much praise cannot be awarded to British cookery on that score. Boil, indeed, we do, but much too furiously. Strange, in the land where steam engines were discovered, where the economy of fuel and the philosophy of latent heat are so well understood and applied in matters mechanical, the widest possible departure is sanctioned —nay, enjoined—in our cookery. We don't want our female cooks to understand first principles; but it is strange that none of our philosopher cooks, or cook philosophers, should ever have taken heed of the obvious fact, that, when water—in an open or tightly closed vessel—boils, it can be made no hotter, however great the consumption of fuel, and however furious the boiling. If this obvious fact had been impressed upon the makers of cooking ranges, it would have influenced the construction of the latter; and gradually our female cooks—without reasoning at all, which we deprecate—would have boiled with less frightful expenditure of fuel. Nor is waste of fuel alone in question. Many culinary processes—all the varieties of stewing, for example—are best performed at temperatures considerably

below boiling. Of this class of operations British cooks have not the remotest idea. Reasoning beings, who contemplate the *ars coquinaria* from a philosophical point of view, will not do amiss to revolve in their minds the beautiful doctrine of equivalents of force.—*Dublin University Magazine.*

The Beautiful in a Tree.—Downing says—"It seems to us indisputable that no one who has perception of the beautiful in nature, could ever doubt for a moment, that a fine single elm or oak, such as we may find in the valey of the Connecticut or the Genesee, which has never been touched by the knife, is the most perfect standard of sylvan grace, symetry, dignity and finely balanced proportions, that it is possible to conceive One would no more wish to touch it with saw or ax (unless to remove some branch that has fallen into decay) than to give a nicer curve to the raindow, or add freshness to the dew drop. If any of our readers will give themselves up to the study of such trees as these—trees that have the most completely developed forms that nature stamps upon the species, they are certain to arrive at the same conclusions."

Humming Birds.—The Ruby Throat is very easily tamed, and is a most loving and trustful little creature. Mr. Webber has given a most interesting account of a number of Ruby Throats which he succeeded in taming. On several occasions he had enticed the living meteors into his room by placing vases of tempting flowers on the table and adriotly closing the sash as soon as they were engaged with the fllowers, but he had had always lost them by their dashing at the window, and striking themselves against the glass. At last, however his attempts were crowned with success, and "this time I succeeded in securing an unwounded captive, which to my inexpressible delight, proved to be one of the Ruby Throated species, the most splendid and diminitive that comes north of Florida.

It immediately suggested itself to me that a mixture of two parts refined sugar with one of fine honey, in ten of water, would make about the nearest approach to the nectar of flowers. While my sister ran to prepare it, I gradually opened my hand to look at my prisoner, and saw to my no little amusemnt as well as suspicion, that it was actually "playing possum," feigning to be dead most skilfully. It lay on my open palm motionless for some minutes, during which I watched it in breathless curiosity. I saw it gradually open its bright little eyes, and then closed them slowly as it caught my eye upon it. But when the manufactured nectar came, and a drop was touched upon the top of its bill, it came to life very suddenly, and in a moment was on his legs, drinking with eager gusto of the refreshing draught from a silver teaspoon. When sated, it refused to take any more, and sat perched with the coolest self-composure on my finger, and plumed itself quite as artistically as if on its favorite spray. I was enchanted with the bold, innocent confidence with which it turned up its keen black eyes to survey us, as much as to say, "well good folks, who are you."—*Rutledge's Illustrated Natural History.*

Natural Barometer—The spider, says an eminent naturalist, is almost universally regarded with disgust and abhorrence; yet, after all, it is one of the most interesting, if not the most useful, of the insect tribe. Since the days of Robert Bruce, it has been celebrated as a model of perseverance, while in industry and ingenuity it has no rival among insects. But the most extraordinary fact in the natural history of this insect, is the remarkable presentiment it appears to have of an approaching change in the weather. Barometers, at best, only foretell the state of the weather with certainty for about twenty-four hours, and they are very frequently fallible guides particularly when they point to *settled fair.* But we may be sure that the weather will be fine twelve or fourteen days, when the spider makes the principal threads of its web very long. This insect, which is one of the most economical animals, does not commence a work requiring such a great length of threads, which it draws out of its body, unless the state of the atmosphere indicates with certainty that this great expenditure will not be made in vain. Let the weather be ever so bad, we may conclude with certainty that it will soon change to be settled fair when we see the spider repair the dmages which his web has received. It is obvious how important this infallible indication of the state of the weather must be in many instances, particularly to the agriculturist.

Ocean Splendours.

When the sea is perfectly clear and transparent, it allows the eye to distinguish objects at a very great depth. Near Mindora, in the Indian Ocean, the spotted corals are plainly visible under twenty-five fathoms of water. The crystalline clearness of the Caribbean sea excited the admiration of Columbus, who, in the pursuit of his great discoveries, ever retained an open eye for the beauties of nature. "In passing over these splendid adorned grounds," says Schopt, where marine life shows itself in an endless variety of forms, the boat, suspended over the purest crystal, seems to float in the air, so that a person unaccustomed to the scene easily becomes giddy. On the clear sandy bottom appear thousands of sea stars, sea urchins, molluscs, and fishes of a brilliancy of colour unknown in our temperate years. Burning red, intense blue, lively green, and golden yellow perpetually vary The spectator floats over groves of sea plants, gorgonias, corals, alcyoniums, flabellums, and

sponges, that afford no less delight to the eye, and are no less gently agitated by the heaving waters, than the most beautiful garden in earth when a gentle breeze passes through the waving boughs."—*The Sea and its Living Wonders.*

Order.—Never leave things lying about—a shawl here, a pair of slippers there, and a bonnet some where else—trusting to a servant to set things to rights. No matter how many servants you have, it is a miserable habit, and if its source is not in the intellectual and moral character, it will inevitable terminate there. If you have used the dipper, towel, tumbler, etc., put them back in their places, and you will know where to find them if you want them again. Or, if you set an example of carelessness, do not blame your servants for following it. Children should be taught to put things back in their places as soon as they are old enough to use them. If each member of the family were to observe this simple rule, the house would never get much out of order, and a large amount of vexation and useless labor would be avoided.

The End of Literary Discipline.—To attain a power of exact expression is the one end of true literary discipline. To put his whole thought and express his actual emotion in his words, not to interpolate clever embellishments, is the object even of the careful writer, when he takes pains to revise what he has written. It is true that men write feebly who write as they speak. Spoken language has eyes, hands, every movement of the face, every gesture, of the body every tone of the speaker's voice, to illustrate it as it flows. To written language all these aids are wanting, and the want of all must be supplied by care for the right use of words.—*London Quarterly Review.*

Cowbells.—It is said that a good cowbell of rolled sheet-iron, well made, with a mouth three by five inches, can be distinctly heard at a distance of from three to five miles. It is said that a farmer in England provides all his cows with bells tuned to different notes in the scale, and the whole running through several octaves. A visitor to this farm is charmed by the music, as well as by the sleek sides of the cattle. Sometimes he hears several notes in unison, then a slight discord, and then a sweet harmony, and all varied by the rising and falling of the breeze.

Editorial Notices, &c.

Report on the County of Bruce.

We give in the Transactions of this number, the conclusion of the Report on the County of Bruce. The Author has drawn a very dismal picture, we cannot help thinking too much so of some of the institutions of that rapidly progressing County; and some of his opinions on practical points appear to us to be rather the result of theorizing than of experience. The report, however, contains much information of a useful character, and many suggestions deserving the attention of the settler in a new County. Some portions not quite suitable to the pages of the Agriculturist, we were obliged to omit.

Prizes for County and Township Agricultural Society Reports.—We regret that owing to numerous circumstances which need not be fully stated here, a long delay has taken place in announcing the premiums for the best Reports received from County and Township, Agricultural Society's in the year 1860, sent in competition accordance with the programme previously published. The Committee have now however made their report, which we subjoin :—

The Committe appointed to examine the County and Township Agricultural Societies received at the office of the Board of Agriculture in 1860, have now done so, and they report as follows ;

The Dundas County Report is somewhat more voluminous than desired, but as it contains the largest and most carefully prepared amount of information, they award it the first prize of $30. West Durham, West Middlesex, and West Brant, approach each other nearly in order of merit, and the committee had some difficulty in deciding between them. On the whole, however, they have concluded to award the

West Durham Report the 2nd prize of $20 ;
West Middlesex " " 3rd " 15 ;
and West Brant " " 4th " 10.

Amongst the remaining reports those of Norfolk and Haldimand rank very nearly with those to which prizes have been awarded, and are dedeserving of attention ; for the information and suggestions they contain. The Committee would also notice the Reports from North and South Simcoe, Victoria, Niagara, Kent, Bruce and Elgin. Several others also, although brief, contain statistics and other information of a characte ruseful for reference.

In the Township Reports the Committee find those from Clarke, Adelaide, and the Seneca, Oneida and Cayuga Societies, to a great extent reproductions of the West Durham, West Middlesex and Haldimand Reports. As the Haldimand Report however does not get a prize as a County Report, and as the Committee consider the Seneca, Oneida, or Cayuga Report the best among the township Reports, except those from Clarke and Adelaide, with which it is about equal, they awardt the first prize of $20. It has not been published, the chief part of the information contained in it will be found in the Haldimand County Report. The Reports from Eramosa, Humberstone and Otonabee are nearly equal in merit, the Committee have, however awarded the

Eramosa Report	the	2nd	prize of $15
Humberstone	"	3rd	" 10
Otonabee	"	4th	" 5

The Report from Tilbury East is aiso an interesting one, being very nearly equal to some of those to which prizes are awarded. Amongst the remaining repoots the committee would notice favourably those from Mount Forest, Nelson, Osgoode, Chatham, Camden, Guelph, and one or two others.

GEO. BUCKLAND,
Chairman.

Toronto, Sept. 15th, 1851.

ALLEN'S AMERICAN SHORT HORN HERD BOOK. —We are indebted to Lewis F. Allen, Esq. of Black Rock, Buffalo, N. Y. for a copy of the 5th vol. of his Short Horn Herd Book. This embraces pedigrees of Bulls from No. 3623, to No. 4537, and a proportionate number of cows, amongst which are a considerable number of pedigrees of animals bred or owned in Canada.—The value, indeed we may say the indispensableness of the Herd Book is well known to every breeder of Short Horn Cattle. We need only say that this volume is prepared with the same care and attention, and printed in the same style as the previous volumes of the series.

THE BRITISH REVIEWS AND BLACKWOOD'S MAGAZINE.

From the frequent notices we have published of the high literary and scientific standing of the Quarterly, Edinburgh, Westminster, and North British Reviews, and Blackwoods world-renowned Magazine, it is only necessary that we point out to our readers the system on which they can obtain excellent reprints of their unrivalled periodicals at a comparatively small cost, and within a week or two of appearance in Great Britain.

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ANNALS OF THE BOTANICAL SOCIETY OF CANADA, VOL. I—PARTS 1st. & 2nd., KINGSTON, C.W., 1861.

There two parts, well printed and of most respectable appearance, contain a number of interesting and valuable papers read before the Society during the first year of its existence; and they bear most unmistakable signs of early vigour, and indicate a long and healthy career of progressive usefulness and improvement. The appearance of their Annals at so early a period are a credit to the managers of this new Society, and a pleasing evidence that the social atmosphere of Canada is not ungenial to the successful prosecution of scientific research. We shall doubtless find in several of the papers contained in these Annals, something directly interesting and useful to our readers. Professor Lawson, Queen's College, Kingston, is the Secretary of the Society, to whose scientific attainments and persevering industry, much of its success is to be attributed.

AYRSHIRE BULL FOR SALE.

MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

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Paris, C. W. June, 1861 3t.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the GovernmentHouse. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Toronto, 1861. *Secretary.*

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Brantford, April 8th, 1861. 4-t

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OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

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THE

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OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, OCTOBER 1, 1861. No. 19.

The Sixteenth Annual Exhibition of the Provincial Association of Upper Canada.

It is not our intention to write a report of the recent exhibition, which will receive proper attention, in due course, in that portion of our Journal devoted to the Transactions of the Board of Agriculture, with the official list of premiums, &c. In the meanwhile we have much pleasure in recording the universally admitted fact that the Exhibition, either as a whole, or in any of its departments, was a complete success. The weather, fortunately, proved fine till the close of the show, when it commenced raining, and the number of entries and visitors was little, if anything, short of the last memorable meetings of the association in Toronto and Hamilton. As by far the greatest part of the animals and materials of the exhibition is made up from the districts surrounding it, the late show affords most conclusive and pleasing evidence of the rapid progress which the western counties have of late years made, both in agriculture and the mechanic arts.

The Exhibition Building is altogether different in its style and appearance from any of its predecessors, and is a convenient and substantial structure. The following description will be interesting to such of our readers as were unfortunate enough not to be present at the Exhibition:—

"The ground plan of the building is a regular octagon, its dimensions, from opposite angles, being 186 feet. The space afforded by the ground area is upward of 24,000 feet, while the galleries give an additional space of 4,000 feet more. The external wall is built of white brick, on a foundation of rubble masonry and concrete, and is 21 feet in height. The entrance to the building is through eight doorways, one at each angle, each eight feet wide and fourteen feet high. In the brick wall on each side of the octagons, and between doorways, are five spacious windows, making on the ground floor forty windows. The roof of this portion of the structure is covered with felting, gravel, &c. The arrangement of the doors afford ready ingress and egress to the building, besides securing a thorough draft for the purposes of ventilation. The second tier of the building, containing the gallery, rises to the height of thirty-two feet above the ground-line, and 114 feet in diameter from opposite angles, giving a wall accommodation of more than 300 lineal feet, lighted with 48 windows, every alternate one being hung on a pivot to admit of ventilation. The ascent and descent to the upper portion of the building are provided for by two stairways, one being intended for the entrance and the other for the exit of the public, and leading in opposite directions, so as to divide the ground. The third tier of the building is a continuation of the inside gallery wall, and runs to the height of forty feet above the ground line. This tier supports the cupola, and is covered with a shingle roof. The interior view is clear, and is not intercepted by any timbers to the height of eighty-seven feet. The full height of the building to the top of the flag-staff is 114 feet; the dimensions of the cupola, twenty feet diameter by thirty-one in height; the area of the ground floor and gallery, 28,000 feet, being about the same area as the Hamilton Exhibition Building, and 4,000 feet less than the Toronto Building. The sheeting of the roof is painted a blue color, the timbers

a drab. Provision is made for a band of music in a suitable situation. The building is designed and constructed with a view to the purposes for which it is erected, and also with a due regard to economy. The building is of the most permanent character, the best stone, brick, and lumber obtainable being used in its construction, while the entire workmanship is of a superior order. On the whole, it may be said that the London Exhibition Building is alike creditable to the Association and the Province."

The ground on which this fine building is erected is situated most conveniently within the city limits, and consists of about thirty-six acres, including a pretty sheet of water on the northern and lower side. The subsoil being sand, and the surface gently sloping, the surface is comparatively dry, even in showery weather, and, taken altogether, with the roomy and substantial erections for stock of all descriptions, the London show-grounds and buildings are not surpassed by any of the other three places that have permanent erections; and they are certainly highly creditable to the citizens of the "Forest City," who met by far the greatest portion of the expense.

Several Americans of distinction were present; among them the Hon. Mr. Geddes, President of the New York State Agricultural Society; Mr. Harris, of the *Genesee Farmer*; Mr. Moore, of the *Rural New Yorker*, from which we copy the following extracts from an editorial in the last number:—

"The Annual Show of the Provincial Agricultural Association of Canada West, at London last week, was a grand affair—a great exhibition, large attendance, and altogether most creditable and successful. Though present only one day—the 24th—we had the good fortune to see, and were enable to take brief notes of, the display in most departments, and will endeavor to give a summary of our observings. As time was limited and notes taken while standing, our report is necessarily rough and imperfect—yet, though far from doing justice to the Exhibition, we trust it will convey some idea of the progress of the Farmers, Horticulturists, and Artisans of the Province, and the credit to which they are entitled for such well-directed and successful efforts to advance Improvement as were manifest on the occasion.

* * * * *

The show of stock is always the leading feature at the Provincial Fairs, but was this year much larger than usual, in most departments. Indeed, the display so far exceeded expectation, that many stalls and pens were obliged to be hastily prepared, in addition to the large number completed before the opening of the Exhibition.

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Sheep.—As usual at Provincial Fairs, the show of sheep, especially of Long and Middle Wool or Mutton breeds, was large and magnificent. There were over 750 entries. The Leicesters, Cotswolds, Cheviots, and other breeds and crosses, made a fine display.

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Swine.—The most popular breeds of the genus *Sus* were represented by excellent specimens—the show being the largest, and of the best average quality, we have seen for years, if ever. The entries in this class (about 250) indicated considerable competition, and the hundreds of sleek and handsome big and little pigs received a due share of attention from spectators. Both the large and small breeds were shown in considerable numbers—the Yorkshires, Suffolks, Essex, Berkshires, &c., &c., and their crosses, being numerous and noteworthy.

Poultry.—The display of Poultry was the largest and one of the finest we have seen anywhere for years—since the height of the "chicken fever." The Show embraced the usual variety of fowls, Turkeys, Geese, Ducks, Pigeons, &c., and was worthy of a more extended examination and notice than we are able to bestow.

GRAIN, ROOTS, AND VEGETABLES.

Grain and Seeds were exhibited on a large scale, compared with our New York display, though Canadians assured us the show was not equal to that of last year in either quantity or quality. Wheat (both spring and winter) barley, oats, peas, rye, and Indian corn, were shown in abundance, and there were many samples of superior quality. We had only time, however, to give a glance at the fine display, and hence cannot particularize. Of the smaller seeds—such as timothy, clover, millet, Hungarian grass, flax, &c., there was an excellent variety much larger, and better than we ever saw at any of our State Fairs. Would that our New York farmers might emulate their Canada brethren in this department, and for once show what they can exhibit.

Roots and Vegetables were shown extensively and we thought of a quality highly creditable, though this is a branch in which our trans-Ontario friends are wont to excel. Potatos, turnips, beets, parsnips, and carrots, were all displayed in profusion—while the the show of cabbages, squashes, tomatoes, and garden vegetables generally, was large and fine.

DAIRY PRODUCTS, HONEY, &c.

Dairy products were shown in considerable quantity, and apparently of good quality. The display of both butter and cheese far exceeded our anticipations, in all respects. Two cheese, weighing about 1,200 lbs. each, made and exhibited by Hiram Ranney and Jas. Harris, of Salford, attracted marked attention and inquiry.

The manufacturers propose to send the larger one (which is 4 feet 5 inches in diameter, and 19 inches thick,) to the World's Fair, and may send both. They are worthy of the honor. Mr. Ranney also exhibited fine samples of Pine Apple and Stilton cheese.

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Various other departments of the Exhibition were noted, but space forbids our giving particulars. The display of Domestic Manufactures, Fine Arts, Fancy Work, &c., far exceeded our expectations, not only in extent but quality, and was said to be an improvement upon former exhibitions. The "Palace" was full of useful and curious products and articles, and alone comprized a splendid display, aside from the grand show on the outside—an exhibition decidedly commendable, and most creditable to the industry, skill, enterprise, and artistic taste of the People of the Province.

—Though pleased with the Exhibition, we are constrained to add that greater pleasure was expected in meeting the farmers, horticulturists, and other producers in attendance. To many exhibitors and officers—and especially Messrs. Denison and Thomson of Toronto, and D. W. Freeman, Esq., of Simcoe—we are indebted for courtesies and attentions which will be long remembered. Indeed, our brief view of the Provincial Fair of 1861 was most pleasant, gratifying, and instructive.

The Great Exhibition at London, England, 1862.

The subjoined memorial was recently addressed to the Executive Government, by the Boards of Agriculture and Boards of Arts and Manufactures of Upper and Lower Canada, jointly:

To His Excellency the Right Honourable Sir Edmund Walker Head, Baronet, K.C.B., Governor General of British North America, &c., &c., &c

The petition of the Board of Agriculture for Upper Canada, the Board of Arts and Manufactures for Upper Canada, the Board of Agriculture for Lower Canada, and the Board of Arts and Manufactures for Lower Canada.

Respectfully Sheweth,—

That during the last session of the Provincial Parliament, your petitioners severally addressed your Excellency and the other Branches of Parliament, praying that commissioners might be appointed, with the necessary powers to secure the proper representation of the industrial resources of the Provinces in the Great Exhibition to be held in London under the authority of a Royal Commission, in the year 1862, and that the necessary funds should be placed at the disposal of such Commissioners for that purpose.

That this prayer of your petitioners was not then granted. Yet so heartily convinced are your petitioners both of the desirability of securing such a representation of Canada on that occasion, and of the almost unanimous desire of the people of this Province that the necessary steps should be taken to that end, that they venture again humbly to approach your Excellency and solicit Executive action to that behalf.

That as the result of the position taken by Canada in the Great Exhibition held in London in 1851, and in Paris in 1855, a knowledge of the vastness of the resources of the country has been spread throughout Europe, and large investments of capital have been made here tending to the rapid developement of those resources. That this is evidenced alike by the high credit which the Provincial securities have always since enjoyed, by the vast sums embarked in our railways, and by the multiplication of agencies for the loaning to Canadians of transatlantic capital for the improvement of real estate. It has also been evidenced by the establishment in this country of foreign consulates, and the developement of its foreign trade as well as by the efforts made (in France more especially) through those consulates, further to develope and extend our commercial relations with other countries. It is also evidenced by the success of recent Postal conventions with foreign Goverments, which previously to 1851, would not have conceived of Canada as a country with sufficient resources to establish and maintain separate transatlantic ostal communications.

That since the year 1855 new and important discoveries of mineral wealth have been made—the rich copper ores of Lower Canada and the mineral oils of Upper Canada being especially noteworthy—new and important branches of industry have arisen; and it is fitting that these should be brought under the attention of European capitalists and men of enterprise with due prominence.

That a new census of the Province has just been taken, and some of its most prominent results ought to be compiled and laid before the European public; and this can in no way be so effectively done as through the agency of a Commissioner, appointed to represent Canada in this the third Great International Industrial Congress.

That all important foreign countries, even the United States, (not adequately represented on previous occasions, and now suffering the ordeal of civil war) have announced their intention of competing on this occasion, and have appointed Commissioners. All other British Colonies (including the Acadian Provinces, before unrepresented) almost without exception have done likewise; and therefore for Canada to absent herself were to make a confession that she has, as compared with her sister colonies, retrograded, or

remained stationary, which must prove prejudicial to her interests. Intending emigrants cannot fail to be influenced in a greater or less degree by the position which the several colonies take in these Exhibitions, though not possibly to the extent originally anticipated, and nothing can be of greater importance to Canada than a healthy immigration to her untilled fields and her unworked mines.

That by the 6th rule or order of the Royal Commission, no party desirous to send articles to the Exhibition can do so, or communicate with that Commission, except through Commissioners appointed as the organ of communication by the Government of his own country, and a barrier is thus placed in the way of individual efforts to exhibit Canadian products. Besides, such individual efforts must fail to produce the desired effect which a more complete and united representation of the country's resources would do.

That it is necessary that steps should be immediately taken to secure space in the Exhibition building, since the Royal Commissioners have advertised that the allotment will be made a few weeks hence.

That if a Committee were forthwith appointed and space secured, it might through the instrumentality of the Geological Survey and the Agricultural Societies, and by an appeal to individuals to exert themselves in this behalf, secure a large representation of the products of the soil and mines, almost for the mere cost of transport.

That if your Excellency were advised to lay before Parliament, should it be called together before or in the month of February next, a moderate estimate for the expenses of the commission, preparations could be forthwith made by individual exhibitors, and articles made for submission for selection to the Commissioners in March, to be shipped during that month to Britain.

That the cost to the Province of its part in the Paris Exhibition of 1855 was, as your petitioners are informed, altogether $60,000.

That many expenses were then incurred which might now be unnecessary, the voyage being shorter, and one transhipment being avoided. Your petitioners are convinced that out of a similar, or perhaps less grant, the half might be returned to the Provincial Treasury on this occasion, if due economy were exercised in its arrangement.

Wherefore your petitioners humbly pray that your Excellency will be pleased to appoint a commission invested with the necessary powers, to secure the representation of the industrial products and resources of the Province in the Exhibition to be held in London during next year, and with such assurances with respect to the grant to be recommended to Parliament as your Excellency may be advised t is possible to make.

And your petitioners, as in duty bound will ever pray.

In reference to which the following notice has appeared in the *Canada Gazette*:

Secretary's Office.

Quebec, 28th September, 1861.

His Excellency the Governor General has been pleased to appoint:—

Sir William Logan, Provincial Geologist, Hon. Louis Victor Sicotte, President of the Board of Agriculture, L. C., Edward William Thomson, Esquire, President of the Board of Agriculture, U. C., John Beatty, Junior, Esq., M. D., President of the Board of Arts and Manufactures, U. C., Jean Charles Tache, Esq., M. D., and Brown Chamberlin, Esq., Secretary of the Board of Arts and Manufactures, L. C., to be Commissioners through whom Canadians can obtain exhibition of such articles as they desire to transmit to the International Exhibition of 1862 to be held in London.

We are informed that the Commissioners have already met in Montreal, and have taken preliminary steps towards securing the proper representation of Canada at the great Exhibition. Government has not yet however granted any pecuniary aid to the object.

Importation of Stock.

[We have sincere pleasure in transferring the following letter of a correspondent of the *Globe* to our columns, heartily endorsing the sentiments which it contains. It is a pleasing and encouraging thought that men like Mr. Miller benefit both themselves and the country in which they live.—Ed.]

Sir,—The *Agriculturist*, of the 16th ult., publishes extracts of letters from F. W. Stone, Esq., Moreton Lodge, Guelph, showing that he had been making fresh additions to his already large and valuable farm stock. It must be gratifying to the ambitious men of the West to find that they have resident among them a gentleman of such enterprise. Long may he live and thrive in the good work he is engaged in. But much as Mr. Stone deserves credit for his enterprise, I desire to bring under the notice of the public a person no less deserving of credit for his enterprise—George Miller, of Riggfoot, Markham, long and favourably known as the oldest importer of thorough bred animals, and one of the most successful breeders in the Province. Mr. Miller was absent last winter some six months on a visit to Great Britain. In the course of his tour he inspected the stocks of the most celebrated breeders in England and Scotland, and on his return brought out 49 sheep, 6 Galloway heifers, 1 Ayrshire cow and calf, 1 sow

and five pigs. The sheep comprise Leicester, Cotswold, Shropshire Downs and Cheviots. In Leicesters and Cotswolds Mr. Miller stands unrivalled. He has, I believe, the largest flock, comprising the largest carcase, and longest wooled sheep, of any breeder in Canada, and I suppose I am safe in saying, has carried off the most prizes of any exhibiter at our local and Provincial Fairs. At Hamilton, last year, he carried off the Gold Medal for the best bull shown. I had lately the pleasure of going over the farm and was shown the new breed of sheep—Shropshire Downs—lately introduced by Mr. Miller. They are pure bred, and to the uninitiated appear to be every thing desired in size, shape, and wool, and in Mr. Miller's opinion a decided improvement on South Downs, as being larger in the body, longer in the wool, and in every way better adapted to the country. Of Cheviots, Mr. Miller has also introduced a sample. For some localities these may be better adapted. Time, however, will test this. The six Galloway heifers, pure bred and of fine appearaucc, make quite an addition to his stock. The Ayrshire cow and calf are also pure bred, and considered by many to be a decided advantage to the dairyman. The sow and pigs are of the Yorkshire and Cumberland improved breed, and are really fine animals. Mr. Miller has, I think, the best herd of Short Horns in the County of York, and when I say that I may as well stump the Province. His bull, Prince of Wales, is a noble animal, and although only three years old, has taken eleven prizes—three at New York State Fair, two Provincial, and six local—And no less than four medals. I do not think the same can be said of any other animal in Canada.

It is worth a day's ride to visit the Laird of Riggfoot. You will find a large farm, well and profitably managed, with by far the largest flock of sheep from imported stock in the Province, and his stock of cattle surpasses anything of the kind in the country. It would well repay you, Mr. Editor, to pay Mr. Miller a visit, and as a friend of the Laird of Riggfoot I extend to you a cordial invitation, and will ensure you a hospitable treatment and a friendly welcome.

Yours truly,

JAMES.

Toronto, Sept. 13, 1861.

Flax Culture in Canada.

[The importance of this question is so great that we insert below two letters published in the *Leader*, from gentlemen professing ample opportunities of forming a sound judgment upon it. Ed.]

Weston, Sept. 19, 1861.

To the Editor of the *Leader*.

Dear Sir,—I have just returned from Europe, where I have been on a mission of some months, principally in the northern counties of Ireland and in Scotland with a view of promoting emigration to Canada and it may be interesting to some of your readers to know that from nine to ten thousand emigrants have reached our shores this season in excess of the numbers up to this period last year. This, I can safely say, is mainly owing to the active measures taken by the Canadian Government, in circulating, through the hands of agents, a large amount of valuable printed information in pamphlet form, with maps of both Provinces. I also feel quite warranted in stating that the foundation is laid for a large increase next and following years. My attention has been particularly directed to small farmers of Ulster and other places with more or less means. Many have expressed their desire at once to leave for Canada, but have frankly acknowledged their inability to do so on a few months notice, and numbers have their minds made up to be prepared next spring. Although the population of Ireland has materially decreased during the last few years, yet the large landowners are most anxious to have their farms enlarged and in fewer hands. The tenants, too, are most anxious to better their position, and to be relieved of the heavy rents and still heavier taxes; and of necessity they are driven to seek a home in Canada, or some other country, for themselves and families.

The present disruption in the United States will also serve to swell the tide of emigration to Canada for many years to come, as at present every vessel leaving New York, Philadelphia and other seaports is taking large numbers back to Europe, and many are coming direct to this country.

On my arrival in Belfast, I found a strong desire on the part of the linen manufacturers and spinners to encourage largely the growth of Flax. The present supply not being anything like equal to the demand, agents were being sent to India and other places, at great expense to give instructions in the cultivation of the plant. The question at once presented itself to my mind why could it not be grown in Canada. I feel confident that it could be done to great advantage. If the farmers would only give it a fair trial, they would be convinced that it is a more profitable crop than wheat, especially in many of the front townships, where the average is not more than 16 to 18 bushels to the acre. Many farmers in the North of Ireland sold their flax on foot this season for £20 sterling per acre, and prices vary from £50 to £100 per ton; and for fair qualities often £150 a ton is obtained. The want of machinery for dressing it I am aware, has been a drawback up to the present time, as Scutching Mills have been expensive and require skilled labour at high rates to enable the farmer to get it prepared for market. But a Flax Scutching machine is now manufactured by Messrs. Rouan & Co., Belfast,

at the low rate of £24 sterling, which is capable of doing an amount of work equal to any other machine, and can be attended by a boy or any labourer with a few hours instruction. It was exhibited at the late Agricultural Show at Belfast, and highly approved of. I have in my possesion a number of statistics and works on the cultivation of flax, all of which I will be happy to furnish to the Board of Agriculture. I also place in your hands for publication, a letter from Robert McCrea, Esq., Grange House, near Strabane, a gentleman who farms largely and grows large quantities of flax, and from whom I received my information, in his house. He had on his farm this year the growth of two barrels of seed, sent him by his brother in Guelph, which I believe was obtained from a Mr. Perine, in the County of Waterloo, and which looked as well as any I saw in the country. I am told there are several thousand acres under cultivation in that district this year, and if this crop is profitable in Waterloo I see no reason why it should not be profitable in other parts of the Province.

Your obedient servant,

J. A. Donaldson.

To John A. Donaldson, Esq., Canadian Emigration Agent, Londonderry.

Dear Sir,—The interest you have taken in my attempts to bring the capability of Canada as a flax producing country before the public, leads me to think that a few hints on the preparation of the soil, steeping and after management of the crop, might be useful on your return to that country.

My trip in 1859 gave me ample opportunities of judging, and I have no doubt there is much land in Canada West capable of growing good flax, as I saw in company with my brother, several fields grown by Messrs. Perine, of Waterloo County, and it only remains to be seen whether the climate and water are suitable for its preparation for the linen manufacturers of Belfast and Lurgan, &c.

The land best suited for the growth of Flax has a clay subsoil, and should have a portion of t mixed with the active soil by deep plowing, ior trenching; at the same time care should be taken that too much of it is not brought up in one season, as it would override, or neutralize the action.

But whilst a clay soil produces both the heaviest crop, and the finest quality, many other descriptions of soil give good crops, under proper treatment.

In Canada there is a long period of fine weather after harvest which will afford an opportunity of cleaning the land intended for Flax, of root-weeds; this is best done by scarifying, harrowing, rolling and raking just deep enough to bring the root-weeds to the surface, when they should be removed, or burnt, and the ashes spread. If this be done early an interval of a few weeks may be allowed to elapse before plowing, to let the small seeds vegetate. The land should then be plowed as deep as possible, (if stiff and difficult, with three or four horses, or oxen, and allowed to remain open and exposed to the action of the frost during the winter, which greatly facilitates the working of it in spring.

As soon as the frost and snow are gone, and the ground partially dry, or sufficiently so to admit of harrowing, and rolling, it should be subjected to a thorough working of these implements, following each other till the top is as fine as an onion bed, and the bottom so solid as to exclude the drought, which in any climate is injurious to the Flax, but in Canada would destroy it.

When the proper season for sowing arrives, (and this differs in different climates) the land should be marked into ridges of 10 or 12 feet wide, to facilitate the sowing and pulling; and the seed at the rate of about 28 or 30 gallons to the Cuningham acre, or 24 to the English statute acre, sown and harrowed with light clover barrows, and rolled. If the land be in good condition, this is an excellent preparation for clover, and it is often sown with Flax, and the pulling of this latter crop is understood to be favourable to the growth of clover, by moulding it, and leaving it to the free action of the atmosphere.

In pulling, great care should be taken to keep the ends even, as the value of the crop is more influenced by this operation being well executed than most people are aware of, and if not attended to in the pulling it can never be effectually remedied afterwards. If rushes can be procured for bands it will save a considerable quantity of the Flax, and be much more convenient for tying it; the sheaves should be small to facilitate the steeping and spreading, and if it can be correctly *struck* in the water the shorter time it remains on the grass the better; the ponds for steeping should be about 3½ or 4 feet deep, care being taken to avoid *iron*, or other *mineral* springs, which would prevent it from bleaching white; the best water being soft running water, and the warmer it is the shorter time will it requre to remain in it; I have known it to water in *five* days, and to take *twenty-one*, but generally in this climate ten.

If the sheaves be packed neatly on their root end, standing nearly straight, or but slightly leaning towards the end of the pond at which the filling has commenced, it will water more equally than if put in less regularly, and will be more easily taken out and less subject to be straggled, or torn. When the pond is full the flax should be covered with straw or grass to protect it from the sun, when it rises above the water, which it will do no matter how deep, when the fermentation takes place; it should always have a quantity of flat stones, or pieces of timber laid at short intervals over it, to keep it under water, and be trampled twice a day, or

as often as it rises up, during the first few days; but it will sink after the fermentation, and should then be carefully watched, to ascertain when it is ready for removal. This is one of the most *critical* stages, and on it a considerable part of the profit, or loss, may turn, and if there be in the neighborhood any good judge, he should be consulted. In the absence of such, a sheaf should be taken out, washed, and dried in the sun, and tried whether it will clean freely. If part of the shoves, or wood part adhere to the fibre, it must remain a little longer in the steep, but experience alone can teach, and no directions can be given that would be understood by persons unacquainted with the matter, but I am certain there must be in every district of Canada many Irish and Belgians, fully up to the subject, and that little difficulty need be anticipated in procuring the services of such. In spreading, care should be taken to shake it well and spread it evenly and thin, but if want of room should necessitate the spreading of it thicker, the rows should be at such a distance from each other as to admit of the flax being turned, then a *day* or *two* on the grass, in order to give an equal exposure and bleaching on both sides. If it has been properly watered, it need not remain more than two or three days on the grass. When lifted it is to be tied up in sheaves, and pu under cover of a house or shed, till it is convenient to remove it to the scutch mill.

While on this head, I may mention that the desideratum so long wished for by Flax growers in Ireland, viz, a machine for cleaning without the necessity of employing so-called *skilled* hands has been recently patented, and brought out by the Messrs. Rowan of Belfast. (This is a piece of information which may be of great service to our friends in Canada, but which you are quite as well acquainted with as I am, having witnessed its operations with me). I believe it comes nearer to the requirements of the Flax growers both in this country and Canada, than any thing yet invented, and the fact that I, who never attempted to clean Flax in the old mills, found no difficulty in doing it in Rowan's, is, I think, proof positive of its adaptation to unskilled labor. This machine, like most new inventions, has met with some opposition; it is objected to on the ground that it gives less cleaned Flax than the old mills, but as this comes from *mill owners*, an interesting party, it should be received with caution, and was not borne out by our experience.

That some modification of the *speed* or *rate* of driving the machine may be necessary, to adopt it to the harder or softer quality of Flax, I do not doubt. This only requires a larger or smaller pulley on the scale, which costs little to effect.

The present seems a very favorable time for introducing the growth and preparation of Flax into Canada. The demand for it in Belfast, Lurgan, Dundee, &c., is greater than can be supplied. The emigration from this province since the breaking out of the war in the United States, (aided by the information you have diffused here respecting Canada), has resulted I understand, in at least nine thousand more than in any former year. Many of these emigrants are from Ulster, the Flax growing portions of Ireland, and from Belgium where it is equally well understood. The weekly intercourse between the St. Lawrence and the Foyle, and Mersey, by steam, affords an opportunity of forwarding the article at once to the best markets in the world, and of procuring such machinery for its preparation as may be required.

I have said nothing as to which seed should be preferred. Different soils and climates may require different kinds of seed, and few experiments, by intelligent growers, may be necessary to decide which is best suited to Canada. Riga is generally preferred here, on account of its growing longer than Dutch or American; but these latter were in more favor some years ago, when the spinning was done in a small wheel, in every farm house and cabin in Ulster, and was then thought to produce a *finer* article: but since machinery has take the place of the domestic manfacture, the Riga is more generally sown.

You are aware that I had this year a barrel of Canadian seed, sown in the same field with five of Riga, as an experiment. The Canadian came up some days earlier than the Riga, and grew much more freely, up to the middle of June; it blossomed fully ten days earlier, and had fully three times the quantity of seed, but is of an average three inches *shorter* than the Riga. I am unable to say which will be the best quality, or the comparative quantities each will produce, not having got it cleaned out, but I hope to be able to give you an account of them next week; I cannot doubt, however, that the Canadian grower of Flax would find his advantage in changing his seed either from Riga, or Holland, at least every second year, as like every other crop it has a tendency to degenerate when grown in the same locality, especially if that be not its native, and this is evinced by the immense quantity of seed borne by the Canadian here.

I sent two barrels of Riga Flax seed last pear to the Messrs. Pe:ne, but it was delayed at Liverpool and Portland, and did not reach them in time for that year's sowing; I suppose, however, they will have tried it this year, and if carefully kept, it may do pretty well, but can scarcely be considered a fair trial, compared with new. You can, however, hear from them on the subject when you return to Canada, and if you or any of your friends should desire it, I will have great pleasure in forwarding any quantity you may require, on the arrival of this year's growth.

From what I have written, as well as from your own observations during Spring and Summer, it is plain that Flax growing and prepara-

tion, is both troublesome and expensive, but the question which has to be answered is, "Will it pay, and leave a greater profit than any other crop?" If this question can, on a fair trial, be answered in the affirmative, the trouble and expense will be disregarded by industrious farmers in Canada as well as here.

Some objections may be made to the steeping, on the ground of its tainting the water and the air and possibly those acquainted with it may think that the smell, which is disagreeable, may be also unwholesome, but it has never been been found so either in France, Belgium, or Ireland, and no healthier women can be seen than those who are employed during the whole flax season in pulling, spreading, and lifting it.

The objection as regards the water applies in an especial manner, or rather it is confined to the *owners* of Fisheries; but I do not know whether the Fisheries in Canada are owned by individuals, or are common property, and on that would turn the validity of the objection, if made.

In estimating the profit of Flax cultivation some allowance should be made for the employment it gives, and the increased or additional crop it introduces into the rotation, by which variety the land is enabled to yield more in a given number of years than by confining it to the growth of any class of crops exclusively. Employment too, in working a succession of crops as Flax, Hay, Wheat, Oats, &c., is more continuous and certain.

You have seen what the Linen manufacture of Ulster, which has its root in the growth and preparation of the raw material, has done, in raising it to its present state of wealth and comfort, as compared with the other provinces so much more favored by nature, in soil and climate, and which has made Belfast the manufacturing and commercial metropolis of Ireland; and, looking at the soil, the minerals, the lakes and rivers of Canada, with the origin of its population, its free government, and its educational establishments, I see enough to indicate a bright future for it too, if you but go to work with a fixed determination to succeed.

Wishing you a safe and pleasant voyage and happy reunion with your family.

I remain, dear Sir,

Very sincerely yours,

ROBERT MCCREA.

Grange House,
Strabane, Aug. 29th, 1861.

The Elodea Canadensis.

[The following letter from a Dutch correspondent recently appeared in the *Canadian News*, published in England. We had previously heard of the mischievous effects of this curious aquatic plant in British waters. Is it known in Canada? If so, can any of our readers give us some account of it?—EDS. C. A.]

Amsterdam, Sept. 1, 1861.

SIR,—That singular aquatic plant, the *Elodea Canadensis*, brought by chance from the waters of North America to England, is well known to have increased in that country to an alarming extent. The phenomenon has now made its appearance in the rivers and canals of Utrecht and its neighborhood, and great and well founded fears are entertained that it will extend all over the kingdom. It appears that not more than two or three years ago a specimen of the plant was introduced here by way of experiment, and it has unfortunately succeeded but too well, as it has propagated itself with such extraordinary rapidity, forming at the bottom of the water an impenetrable tangle of grass of considerable thichness, that it greatly impedes the work of cleaning out the canals. It may now be termed quite an indigenous plant, possibly to the satisfaction of the botanists, but it is certainly an abominable plague for the Government of a country like Holland, intersected by canals in direction.

Mons. Miquel, Professor of Botany at the University of Utrecht and editor of the *Journal de Botanique Neerlandaise*, has expressed his opinion that this plant will in a short time overstep the frontiers of this kingdom and advance into Germany by creeping up the bed of the Rhine. With the exception of some particular varieties of the Lemna, it far exceeds all the aquatic plants of this country, not only in quickness of growth and gradual dissemination over large districts, but also for the wonderful extent and power of its reproducing faculties. The stem of the Elodea is very delicate and easily broken, so that by the natural motion of the waters minute branches and fibres become detached and are carried to a distance by the current, whilst others, coming in contact with the barges and boats, attach themselves to their sides and are carried away by them, which also partially explains the rapidity of their extension to distant parts.

It is quite clear that the astonishing power of reproductiveness of this little plant cannot be ascribed to the dissemination of its seed, for the flower contains no properly developed petals, as Professor Miquel satisfactorily ascertained from some specimens gathered last summer by Mr. Hartsen, Candidate of Philosophy at the above named university. As soon as the branches are broken off they make rapid shoots and thus produce fresh plants. On the approach of winter the brittleness of the Elodea increases so much that in simply lifting it out of the water it breaks to pieces in the hand, and as is generally the case with plants about to reproduce their species the detached fragments are found to contain a

large quantity of a sticky substance, which leads to the belief that each minute portion of the plant becomes a new and independent exemplar. When one considers the great rise of the water in autumn and winter and the unavoidable inundations that take place in consequence, it is clear that all these different movements must greatly contribute to the spread of this aquatic plant over the whole country in a very short space of time. During the summer months, and especially under the influence of bright sunshine, oxygen gas is generated in the Elodea and rises in bubbles to the surface. Mr. Bisdom has analysed its component parts and given a description of the result, which is published in G. J. Mulder's "Chemical Reports and Transactions," vol. III., pp. 97—112.—I am your obedient servant.

[We presume the object of our correspondent is to ascertain if any and what means exist to check the spreading of this extraordinary aquatic plant, and perhaps some of our naturalist correspondents may be able to give a satisfactory answer. We are aware that a prolific water-creeper said to have come from America, succeeded in completely choking several of the natural drains in the neighborhood of Hull, entailing a heavy outlay in clearing them by manual labor; and that the same or a similar creeper had nearly filled up the canal in the neighborhood of Lincoln in the summer of 1860, and great fears were entertained of these waters ever becoming free again from this vegetable parasite. The extreme severity of the succeeding winter having, however, brought with it flocks of wild swans from across the North Sea, it was found on their leaving that they had completely cleared the canal of the obnoxious plant, so much so that no traces of it are now to be found. What says Professor Miquel to an importation of wild swans to clear out the Dutch canals?—Ed. C. N.]

Farm-Yard Manure.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The relation of vegetable and animal life is the theme of a very interesting lecture at the Central Farmers' Club, by Mr. J. G. Hobson, of Long Sutton.

It is hardly necessary for my readers to look beyond their own noble homesteads to discern the importance of such an inquiry. That both these great divisions of organic beings subsist upon each other, is evident to the most careless observer. The farmer is ever acting upon this knowledge, even in foreign countries, where the tiller of the soil is obliged by hard work to accomplish what science has long enabled the English farmer to perform with far greater facility. Thus the listless, idle Spaniard has a proverb that the sheep treads on the land with a golden foot. The hard-working Belgian, as he rests on his trenching-fork, tells you that "there is no manure without stock, no stock without green crops, no green food without manure;" and on these truths he bases his mode of cultivation. The Flemish farmer, therefore, devotes his attention to the preparation of his manure with the most untiring energy and success. He is not content with securing requisite bulk of manure, either liquid or solid; he well knows that the quality of his manure is of even greater importance. The Dutch farmers, therefore enrich their liquid-manure by fermenting, and by adding to it rape-cake and other fertilizing matters. They would be surprised to hear a quantity, of dirty—merely discoloured—water dignified by the name of liquid manure.

The skilful English farmer proceeds very commonly on a different road to the same end; he passes his oil-cake through the bodies of his live stock, and by thus enriching their excreta increases the fertilizing power of his farm-yard dung; and, as I have in another place had occasion to remark, the improvement of this staple fertilizer by feeding stock with cake has been so long and so increasingly practised, that, at length, the advanced price of the cake has rendered it almost necessary to abandon its use. Other oilcakes have been suggested as substitutes for linseed, in stock-feeding; and a still more simple mode has been again advocated, that of applying the cake itself as a manure, without its having previously passed though the body of an animal. An experiment with mangel-wurzel was in this way made by Mr. Corenwinder, in April, 1855 ("Quar. Jour. Ag." 1857, p. 668). Seven portions of a field which had borne a crop of oats were set apart for the experiment; each plot contained $8\frac{3}{4}$ poles, and was manured with 220lbs. of one or the other of the following substances. The result I give in a tabular form—

Cake.	Cost. s.	d.	Produce in lbs.
Arachis, or earth nut.....	9	6	3194
Sesasum (from Indian, &c.)...	12	2	3324
Toulocanna (Sennegambia)...	10	8	2904
Poppy.....	15	0	3487
Cametine.....	14	7	2917
Rape.....	14	3	2811
Hemp.....	14	3	2640

It can hardly fail to be used if, at this season of the year, we remember a few of the scientific facts which bear upon the improvement of the quality of our farm-compost.

The effect of food in varying the power of the excreta of animals is partially known to every one. The more concentrated the food, the more nitrogenous its composition, the richer is the dung of the animal. Take the case of the flesh-subsisting animals: mark the excreta of the fish-consuming wild-fowl of the islands of the Pacific Ocean; note how in their excreta, guano, we find the most powerful of our readily available manures. In this the chemist shows us an

abounding proportion of ammonia and uric acid, both the alkali and the acid containing a large and essential proportion of nitrogen. Uric acid probably exists in the urine of all animals that subsist even partially on animal matters. It has been found in that of man and of our domestic fowls; the urine of the boa-constrictor and several others of the serpent tribe is nearly pure uric acid.

It would be a natural conclusion, from these facts, that the more nitrogenous the food consumed by the animal, the more powerful would be the fertilizing effect of its urine. Some careful experiments made long since with the urine from a large dairy of cows in Scotland support this conclusion ("Quar. Jour. Ag.," vol. iv., p. 96.) Their urine, when fed on the white globe turnip, was found to be larger in quantity, but less effective as a fertilizer, than when they were consuming the yellow turnip or rutabaga, and much less so than when they were fed on brewers' or distillers' grains.

These observations all concur with those of the owners of cake-fed cattle or sheep; the manure is much increased in value, its effects more powerful, and yet more permanent. The policy of applying both liquid and solid inorganic manure in their recent or putrified state has long engaged the attention of the farmer and the chemist; the tendency of the latest researches rather leads to the conclusion that, in both cases, the manure is best applied in as fresh a state as possible. And to this opinion Professor Tanner inclines, in his recently-published prize essay. When speaking of the application of the manure of the farm to clay soils ("Jour. Roy. Ag. Soc.," vol. xx., p. 331), he remarks: We have other reasons which favour the application of dung to the fallows whilst the fermentation is in its earliest stage. In the fermentation of dung, we have important chemical changes taking place amongst the elements which enter into its composition. The great object in fermenting manure is to bring waste matter from the animal body and certain products of vegetable life in such a condition that they can again be useful for the support of vegetation. This fermentation of the dung may be carried out in two ways: the one will materially diminish its fertilizing powers; but by the other plan the change may be controlled so that the manurial properties may, in a great measure, be preserved, although some slight loss is inevitable I have estimated, from the analyses given by Dr. Voelcker as the results of an examination of farmyard manure in its fresh and also in a well-rotted condition, that the ingredients in very superior manure, calculated at their market value, are worth 1s. per ton more when the dung is in a fresh condition that when it has become thoroughly decayed. This loss is experienced when the manure has been carefully fermented for experimental purposes; but when the decomposition takes place under careless management—when, for instance, the drainage from the manure is not carefully preserved—the waste is far greater, so as materially to affect the finances of the farm. In the application of dung in the early stage of fermentation, we have this change taking place in the soil under circumstances which ensure us against loss; for we know enough of the power of these retentive soils to be assured that what is entrusted to their custody will be safely retained for promoting vegetable growth.

The laborious researches of Professor Voelcker, on the composition and changes of farmyard manure ("Jour. R. A. S.," vol. xvii., p. 191), tend to lead us to similar conclusions. Without attempting to follow the Professor through the detail of his ample precautions to attain a fair mixture of the dung (including the straw), made by the horse, the cow, and the pig, I can yet give, I hope, a useful digest of the chief of his laborious researches. Some of his results were —1, That a fresh dung, the proportion of soluble organic and mineral substances is small; 2, of insoluble, large; 3, of ammonia small; 4, of nitrogen, inconsiderable; 5, the organic soluble matters are by far the most valuable—they contain (in equal parts) more than three times as much nitrogen as the insoluable; 6, that dung contains all the constituents of cultivated plants; 7, that the same substances are found in both the soluble and insoluble portion; 8, the principal constituent of the soluble ash of dung is potash; 9, both the soluble and insoluble ash contain much soluble silica, combined either with potash or lime; 10, the prominent constituent of the soluble ash of fresh dung is silicate of potash; 11, of its insoluble ash, lime; 12 (let the reader mark this important fact), that of the soluble ash of fresh dung, 19½ per cent. is phosphate of lime, in the insoluble ash only 9½. It has been found, in fact, that bone-dust, moistened with a little water, in a few days yields a considerable quantity of soluble phosphate of lime, and that this solubility rapidly increases with the putrefaction of the gelatine of the bones.

From the result of other trials, the Professor seems to lean to the opinion that the spreading of farmyard compost on the surface of the soil, for even a considerable period before it is ploughed in, is by no means so injurious a practice as we have hitherto been led to suppose ("Quar. Jour. Ag., 1857, p. 155). He says, that "on all soils with a moderate proportion of clay, no fear need be entertained of valuable fertilizing substances becoming wasted, if the manure cannot be ploughed in at once. Fresh, and even well-rotted dung contains very little free ammonia; and since active fermentation, and with it the further evolution of free ammonia, is stopped by spreading out the manure on the field, valuable manuring matters cannot escape into the air by adopting this plan."

If this is a reasonable conclusion, it goes far to remove our dread of losing, on such soils, the

better portions of farmyard manure by top-dressings. As the season will soon be here when these dressings are commonly applied to grass, it will be useful to remember this fact. The best time for applying the manure is held, by the great Cheshire farmers, to be in the end of September or the beginning of October, particularly in a showery period, as the grass soon covers it, and renders it less liable to be damaged by the sun or drying winds ("Jour. Roy. Ag. Soc.," vol. xix., p. 215). The most recently published report of trials upon the means best adapted to restore to the soil the ingredients removed by the grasses is that of the prize essay on "Top-dressing Pasture," by Mr. James Porter, of Moneymusk, in Aberdeenshire (Trans. High. Soc.," 1861, p. 455). The conclusions to which the result of his experiments led him were, 1, that on strong soils, on lands under cultivation, guano, sulphate of ammonia, nitrate of soda, and soot are the best, and most remunerative if the season is not too dry; 2, that on light soils in alternate husbandry, composts of earth, bone-dust, cattle urine, salt, sea-weed, and fish refuse are the most suitable; 3, for old grass on strong soils, powdered lime is the most effectual dressing; 4, for old grass on light gravelly soils, clayey compost, mixed with quicklime or bone-dust, makes a good dressing. It has been calculated, adds Mr Porter, that a milch cow carries off annually 30lbs. of bone-dust from the land; and if this waste is to be supplied, as it certainly ought, there can be no better way of doing it than by adding bones or other phosphatic manures to the land.

But if it be true that we need not fear impoverishing our dung by exposure to the winds and rain, there is another common source of loss of the soluble portion of our farm-yard manure by soakage in rain-water, of which the chemist has no doubt. When dung is exposed to heavy rains, on certain soils, what the rain-water dissolves and removes from the dung the land receives, its aluminous portion, absorbs and stores up those soluble matters for the service of future crops; but there is in most farm-yards no provision for the richer soluble portions of the dung, which either soaks away or drains some neighbouring ditch or equally unwholesome pond. It is this fact which renders the dung of sheltered animals so superior to that produced in the open air. It is one of many advantages which attend the use of covered homesteads, and would lead to the general introduction of the box system of feeding, if the animals thus fed were improved at the same rate as the dung over which they are confined.

The advantage of preparing manure as little exposed as possible to the weather has been illustrated by Mr. C. Lawrence, of Cirencester (Jour. Roy. Ag. Soc.," vol. xviii., p. 368). He gives the following analysis, by Professor Way, of box and farm-yard manure. He remarks that, "Those who have not previously inspected this system of feeding, and have had an opportunity of seeing at one moment the boxes full of the accumulation of some three or four months' manure, invariably express their surprise at the sweetness of the range of buildings; and in a few minutes afterwards, on setting the forks to work to empty the boxes, still greater surprise at the almost instantaneous evolution of volatile gases on the admission of air to the dense compound below."

	Box.	Farmyard.
Water, per cent	71.40	71.00
100 parts dried at 75 to 80 deg. Fahr., gave of ammonia	2.37	1.70
Matters soluble in water, organic and inorganic	10.70	4.60
Which left on incineration a fixed residue of	4.28	2.78
This fixed residue consisted of—		
Silica	Not determined.	
Phosphoric acid	0.30	0.26
Alkalis, potash and soda	2.00	0.80

It is from such practical inquires that the farmer more and more clearly sees how dependent upon each other are the members of the vegetable and animal worlds, and how essential to the prosperity of the farm is the most anxious care that the food of neither is wasted. It is gratifying and encouraging to look back and note how much has been done in the last quarter of a century in thus economising the true riches of the farm. It is such reflections which will urge on the noble cultivators of our soils to other and still greater triumphs over the manifold and ever-varying difficulties which they have to encounter. Such conclusions will lead them to still more careful modes of preparing the manure of the farmyard. This will, sooner or later, cease to be impoverished by the rain; its drainage water will be systematically employed. That of our large towns no longer be worse than wasted. The farmer of a future day will, indeed, ask with some surprise how it happened in the year of grace 1861 that, while the drainage of Edinburgh, of Mansfield, of Croydon, and of other places rendered luxuriantly fertile so many of acres of valuable grass land, the drainage of millions of persons who dwell in our metropolis and other populous places should not only be utterly wasted, but that grave chemical persons should endeavour to show how useless it is as a liquid manure.—*Farmer's Magazine.*

Scientific Culture of the Strawberry.

[Concluded from page 550.]

It appears that a plain, uneducated market gardener, of the name of Abergust, removed some 46 years ago from Philadelphia to Cincinnatti, and went largely into the cultivation of the Strawberry, in which he marvellously surpassed

all his neighbors by means of a secret method of managing the culture, and which method he had most successfully practised at Philadelphia. So well did he keep his secret that for many years it was not even guessed at; and he supplied nine-tenths of all the strawberries consumed in Cincinnatti, making thereby a very handsome competency. To give Mr. Longworth's own words: "While I could, from one-fourth of an acre, scarcely raise one bushel of strawberries, he (Abergust) would raise 40 bushels. His fruit was much larger than any other brought to market, and commanded from 25 cents [1s.) to 37½ cents (1s. 6d.) per quart. His secret he kept to himself, and my attention was first led to the subject by a casual remark of his son's to me one day in my garden—that I must get very little fruit, as my plants were all males. I then investigated the matter, and soon discovered that there were what he called male and female plants—a fact I communicated to our market gardeners. The result was that strawberries rapidly increased in our market, until as fine as Mr. Abergust's were sold at from 3 cents (1½d.) to 10 cents (5d) per quart.

There can be little doubt that this gardener, Abergust, obtained his knowledge, either directly or indirectly, from Mr. Keen, who had promulgated the information he had required some short time previously. Through Mr. Longworth, Keen's discovery and Abergust's secret was thoroughly ventilated in the United States, and is now universally known in that part of America, where strawberry growing is carried on to an extent little dreamed of in this country.

One individual grower (Mr. Culbertson, of Cincinnatti) sends to market sometimes 4,000 to 5,000 quarts a day, employing 60 persons to pick them Numerous cases are known of 5,000 quarts per acre being obtained in one season; and it is held as an undubitated fact that, by cultivating hermaphrodites (as we do in England), instead of pistillates, only from one-tenth to one-third of a crop can be obtained.

By far the largest and most delicious strawberries in the world, to our knowledge, are those of Chili; and we think plants and seeds from that country might advantageously be brought and domesticated here. Certainly the finest strawberry plant we have ever seen is that of Mr. John Robertson, of Paisley, which is known under the name of "The Wizard of the North', (that is supposing the authorised coloured drawing of the plant, in full bearing, to be a true and faithful representation). Sundry apparently respectable and trustworthy persons testify by letter to having seen it with 78 fine large fruit at one time upon a single plant.

Having obtained a good pistillate, who would be apt to suppose that we had the utmost we could reasonably hope for; but in this we should err very greatly, indeed; for Mr. Charles Peabody, of Columbus, in Georgia, has clearly demonstrated that it is possible to obtain a succession of fruit from the same plants for many months in the year, instead of only one bearing. This most indefatigable gentleman has, in truth, reduced the culture of the strawberry to a perfect science. His is no small garden cultivation, but comprises many large fields, embracing a very considerable acreage, and justified by more than 15 years constant observation and experience. His plan deserves all possible attention and respect. He selects some good pistillate of an ever-bearing variety; and, to impregnate this, he also chooses a good, ever-bearing hermaphrodite, planting seven rows of pastillates, then one row of hermaphrodites, and so on throughout the field. For many years the varieties he employed were the Hovey's seedling pistillates, and the early scarlet hermaphrodites, both flowering regularly together, and both being ever-bearing. Recently he has widely disseminated a seedling of his own, and named after himself.

It is believed that all these valuable seedlings have been originally obtained by judicious crosses with the hardy, ever-bearing, or monthly wild strawberry, such as the monthly Alpine, or others of a similar type. Certainly it is, that not only Mr. Peabody, but numerous other persons throughout the States, obtained by simple field culture a continuous bearing of fruit, from early spring until the winter's frost sets in—a thing altogether unknown in this country, although quite as practicable here as there.

Mr. Peabody, in his statement, given in the "United States Agricultural Report," says:—

"It is now well known throughout the Southern States that for many years I have cultivated the strawberry extensively, and have had from my beds a constant succession of fruit six months, and frequently 10 months in the year. While I am now writing (Dec. 24) one of my beds (of an acre) is loaded with ripe fruit, specimens of which I have sent to New Orleans, Montgomery, Charleston, New York, &c. This bed has scarcely produced a runner the last season, the causes of which will be found in my method of culture. I prefer a sandy soil—that is, a sandy loam with a good mixture of vegetable matter, in which the plants stand 8 to 10 inches apart. In the fall of the year I go over the field with sharp hoes, cutting up all runners, and leaving them on the ground to decay. Somewhat later, I cover the whole field with partially decomposed leaves from the woods or swamps; the rains of winter beat down these leaves; the fruit germ finds its way through them, and the first mild weather of spring the blossoms appear. If I desired to obtain an abundance of leaves and strong runners all over my beds. I should employ animal manure; but as I want fruit, and no runners, I never use animal manure of any kind—nothing but leaf mould and an occasional sprinkle of wood ashes. The leaf mould keeps the ground cool and moist, and the fruit clean, and does not stimulate the roots to make runners. Whatever runners are made,

cut off close; keep the ground clear of grass and weeds, and manure with leaf mould. Beds thus formed and cultivated will to my certain knowledge, continue productive for twelve years, and, I have every reason to believe, as much longer as this system of culture is continued. Strawberries so cultivated are remarkable for their lusciousness and aroma. A very continual watering, whilst bearing, is desirable—as the crop is wonderfully increased, both in quantity and quality, thereby."

Such is Mr. Peabody's mode of raising this delicious fruit; and although we have not the fine climate of Georgia, and may not expect fruit in an open field in December, yet we certainly can adopt the course of treatment that he so kindly points out to us. Our course, then, is to plant the best ever-bearing pistillate and hermaphrodite impregnator; to use no manure but leaf mould, or other suitable decayed vegetable matter, with an occasional sprinkling of wood ashes; to keep all runners off; and to water very frequently during the time of fruiting.

The best descriptions of strawberry for planting, generally, in England would be, in our opinion, 'Hovey's Seedling," the "Early Scarlet," "Longworth's Prolific," "M'Avoy's Superior," and the "Extra Red" (all American varieties, the Prolific, Superior, and Extra Red being seedlings from Hovey's Seedling by one of our best English hermaphrodites), if we could obtain them in this country; but, unfortunately, there are none to be had, unless imported from the United States. The English varieties appear to be all hermaphrodites, from the seed of which famous pistillates may be obtained by any who will take the trouble to attempt it.

Those particularly celebrated at this moment are the Oscar (of Mr. Charles Turner, Royal Nurseries, Slough), the Wizard of the North (of Mr. J Robertson, Linside Nursery, Paisley), the Empress Eugenie (of Mr. Myatt, of Deptford), and two or three well-known varieties. The Oscar is a particularly fine, well-flavoured, firm, and large-sized strawberry; and said to be a cross between the British Queen and Keen's Seedling. The Wizard is said to be between the Elton Pine and Keen's Seedling, producing a large handsome berry, and an abundant crop. The Empress Eugenie has been remarkably large this season, of a dark, blood-red colour, very juicy, rather soft and with a very strong perfume, somewhat similar to the musk melon. We believe this is also called the "Crimson Queen."

We cannot ourselves feel any confidence in an alleged cross between one hermaphrodite and another, unless we are perfectly certain that the pollen of one was applied to the bud of the other, previous to its opening; for almost simultaneously the pollen of its own stamens is matured, and the least motion causes it to fall upon the pistils, which they enclose, and self-impregnation ensues at once. If, however, the pollen from one kind be applied to the bud of the other, just before it opens, the subtile influence descends to the pistils and impregnation is effected surely and certainly, before the flower has yet opened, or its own stamens have had time to burst and shed their pollen. This is the opinion of Mr. Peabody, verified by some 20 years' experience, and we fully adopt his views upon this point. As a matter of course, pistillates, being pure females, cannot impregnate themselves; their artificial impregnation is therefore, perfectly easy, and the cross resulting is beyond doubt.

In conclusion, we may remark that (more or less) all hermaphrodite strawberry plants appear to become more and more imperfect as they get older, until, in some cases, they will not bear a single perfect berry; and we believe that even the very best hermaphrodite (however perfect may appear when young) will, in a few years, exhibit this inherent tendency to infertility.

Templemoyle Agricultural School.

This Irish institution appears from a recent report to be in a prosperous condition, and the instruction is of a rich and useful character. The farm is leased of the London Grocers' Company, who have steadily supported the school from its commencement. The following extract from a speech of Mr. Thompson, an officer of the company, at the terminal examination of the scholars has something more than a local interest.

When he looked around the school, and perceived the advantages which the scholars possessed, not only receiving a sound, practical education in the particular professsion which they had chosen for themselves, but having also put into their hands the key to all the sciences, enabling them to examine into the noble works of God, to see His wisdom as displayed in the in the construction of man; and when they learned of the winds to think of Him who made the winds minister unto them that they ride upon the storms: finding also in the stones sermons, and books in the running brooks—in the light of these they are enabled to look from nature up to nature's God; and soberly and earnestly could he assure them that when he considered these advantages enjoyed here he could wish himself again a boy, standing at their side, surrrounded by those privileges, and learning with them. But, if they had privileges, let them remember that they had also great responsibilities—that in after life they would all go forth as missionaries in the world, whether for the prosperity of their native land, or as the pioneers of civilization in other lands. When thus situated they would never forget the advantage enjoyed here. He assured them that there was no such thing as "lucky hits." By steady, earnest, truthful perse-

verance alone could they succeed. The course of agricultural instruction imparted at this seminary taught them this. They knew that if they were to expect a harvest they must sow the seed, looking for the rains and the genial sunshine to bring forth a crop. Thus let them go forth in their various walks in life, all of them endeavoring to discharge their duties to themselves and others. In one word, he would remind the teachers that they were sowing seeds for eternity, and this made their position solemnly responsible. And if the clergymen would permit him for a time to interfere with their functions, to all would he wish to say a word at parting—let them endeavor to spiritualize their operations. When they sowed the seed in the ground, let them remember there was still a nobler and a better seed to be sown; When they rooted out of the ground the weeds which choked the tender blade, let them remember that weeds of a more noxious tendency required to be removed from their own hearts; when they used the sickle, let them remember that there is a Reaper before whom they all must bow; and when they brought home their sheaves rejoicing, let them remember that there is a harvest home where the attendants are the angels of God and the redeemed; and he prayed God to grant that every one of them might be found in that blessed company.

Weeds.

Somebody wrote a book upon our wild flowers, pretty, graceful, bright-coloured creatures, giving life to our pastures and our hedgerows. Beautiful, indeed, they are, in their proper place; but in the wheat field or garden ruinous. Our weeds are ripening now faster than our corn. The rain will not kill them nor will cloudy, ungenial skies check their vitality. A man who knew nothing of the primeval curse would fancy that weeds were designed for the support of man, they are so unboundedly prolific. And they are for the benefit of man in some sort. for they make labor a necessity; and yet that labor might be more profitably expended on fruitful plants, which the weeds choke and strangle. He is the true farmer's friend who teaches the peasant to extirpate these devourers. Placing them in a heap amidst manure is of no avail. Though the plant be pulled up the sap will flow upward, the flower will blossom, and the seeds ripen, to be scattered next year with precious seed. There is no killing them. They will live three feet under ground for years, for when the land is deeply trenched, up will spring a thick crop of weeds, never observed in the soil before. Few have any idea of their prolific nature. We see the coltsfoot, with its golden stars, in cold, black March, without a leaf, to shelter it; but the flower droops and the green calyx is a roof to defend the seeds within. Every flower head produces its 150 seeds; and these are each shrouded with cotton down, in which the wind fastens and bears it away to other ground. Why is it that this plant has not only its floating seeds, but creeping roots working under ground, here and there shooting to the surface; and there producing its hosts of seeds? A single coltsfoot produces from 3,000 to 22,500 seeds! It is not every peasant who knows that wild mustard produces from a plant 8,000 seeds; the chamomile, 40,000; the may weed, 45,000; the burdock, 24,500; the red poppy, 50,000; the groundsel 6,500; and wild parsley, 6,000. Every one has seen the gossamar parachute which bears aloft the thistle seed like a tiny car. From a single plant ten thousand seeds have floated away on downy wings There are weeds whose seed-pods burst open with violence, so as to scatter the seeds to a distance, where they will not lessen the nutriment of the parent plant. Other plants have seeds equipped with delicate hooks to fasten in the soil; others, again, propagate slyly under the earth, as the crow Gaelic, which produces 700 offshoots in the year. The eye rests gladly, no doubt, upon the nodding poppy or the cockle plant in the corn field; but these weeds have lessened the crop by, at least, a tenth part of its value. The weeds of Ireland cost us nearly six millions a year.

In the *Quarterly Review* for Oct., 1859, there is given in a tabular form, the quantity of weed seeds found in the bushel of crop seeds. Farmers foolishly desire to procure cheap seeds, and there are seedsmen willing to oblige them. Seeds are thus mixed often for purposes of fraud; oftener perhaps, from carelessness. In a bushel of "rye-grass" there were detected no less than 204,800 weed seeds. In a bushel of clover seed, 312,000; of linseed, 304,640; this is quite irrespective of dirt and particles of stone, which make cheap seed by far the dearest that can be purchased. Fraud, in this case, is difficult of detection. A farmer cannot carry a microscope in his pocket, like the Leeds cloth buyers, to detect adulteration. His only security is to purchase from a house of character, and to pay a fair price for the article he requires.

But our fields will bear weeds as long as the road sides are neglected, and the uprooted weeds are merely thrown upon the manure heap. The moment the crop is cut the weeds should be collected and burned. They ought not to be left upon the land to ripen, as they will, and to commit their progeny to the winds. The loss to the agriculturist in the choking of his crop, its insufficient nourishment, the exhaustion of the ground, and the amount of labour eventually required, is something absolutely incalculable.—*Irish Times.*

Agricultural Intelligence.

County and Township Shows.

Hay Township Society, at Rodgerville, Oct. 9.

South Wellington and Guelph Townships, at Guelph, October 10.

In the Counties of Lanark and Renfrew, at Ferguson's Falls, third Tuesday in October.
Carlton Place, first Tuesday in November.
Clayton, second Wednesday in November.
Packenham, second Thursday in October.
Almonte, last Thursday in October.
Ross, fourth Tuesday in October.
Pembroke, third Wednesday in October.
Norwich Township, Norwichville, Thursday, Oct. 10.
North and South Wentworth and City of Hamilton, United Show at Hamilton, October 9 and 10.
West York and York Township, at Yorkville, October 22 and 23.
East York and Markham Township, at Unionville, Markham, Oct. 9.
City of Toronto Elec. Div. Society, and Toronto Mechanics' Institure, Union Exhibition, commencing Oct. 7, and to continue for two weeks.
North Oxford and Ingersoll, at Ingersoll, October 9.
Erin Township, Erin Village, Wednesday Oct. 6.
Bayham Township, at Staffordville, Saturday, Oct. 15.
West Gwillimbury, at Middleton, Thursday, Oct. 10.
Northumberland West, at Cobourg, Wednesnay, Oct. 16.
King Township, at Bowmanville, Oct. 11
Whitby Township; at Oshawa, Thursday, October 17th.
Carrick Township, at Balaklava, October 15.
Stormont, at Carnwall, Oct. 9 and 10.
Walsingham, Port Rowan, Oct 17.
West Middlesex, at Strathroy, Oct. 15.
Niagara Elec. Div., at Niagara, Oct. 9 and 10.

[Secretaries of Agricultural Societies will oblige us by informing us of the days on which their shows are to take place.—EDS.]

Horticultural.

Fruit Tree Vending.

TO THE EDITOR OF THE AGRICULTURIST —I was very much pleased with your remarks in your last number respecting the Apple Tree Vendors, but I fear your advice came too late to act as a caution. There has been a perambulating Yankee Nursery Agent canvassing this Township, representing himself as agent for Moor & Brothers, proprietors of Clover Street Nursery, Rochester. He succeeded in getting orders to the amount of over twelve hundred dollars worth of trees, in this Township to be delivered on the 11th inst. I feel satisfied that it is a perfect sell, from his mode of procedure. The agent has a sample book with all the various kinds of fruit painted most charmingly to take the eye, and then procures some well known person in the neighbourhood to go with him to introduce him to the patients. The agent leaves with the parties who order trees, a copy of his memorandum or order which says, in printed letters. "If any varieties named cannot be supplied *others equally desirable may be substituted.*"

HORTI.

Walsingham, Oct, 4th, 1861.

Garden Botany—The Fuchsia.

The fuchsia, next to the geranium, is one of the most generally known and popular of garden flowers, and we think deservedly so, and will afford, therefore, one of the best subjects for a lesson on garden botany. And before going further, we may define botany as the science which names plants, attaches a name to the different parts of plants, or, as they are called, organs; investigates the offices performed by these organs, their use in the economy of nature. This science, which half a century ago was thought to be only useful to the physician, or to occupy a place among the "unprofitable knowledge" of the curious or the learned, has now obtained a place in the curriculum of the industrial school; and the government (art and science department) have wisely given it a place in their educational programme. Botany, or the department of it called vegetable physiology, in connection with chemistry, forms the science of agriculture and gardening.

If we examine a plant with a view to discover its structure, the name and position of its organs, our investigation receives the name of structural botany; but if we examine with a view to discover those organs in action, and the offices they perform, or, as the naturalist calls it, their "functions," we are then in the province of vegetable physiology. But as it is necessarywe should first be acquainted with the names and relative positions of the organs, just as a child must first know the letters of the alphabet before it can read or spell, so we commence our first lesson on garden botany by enumerating a few of the principal terms used in the science, and illustrating them as applied to some of the organs of the fuchsia.

Let us take up a branch bearing flowers of any fuchsia, and we at once perceive that the flowers are attached to the branch by slender stalks which spring from the axils of leaves. Those stalks are called *peduncles* or flower stalks. The Peduncle, though very general, is not universally developed in plants, there being many cases where flowers are born immediately on the stem or branch, without any peduncle; the latter are said to be *sessile*, while the former are *pedunculate*. At the extremity of the peduncle we may observe a considerable swelling of an oblong, roundish figure, and green colour, which gradually grows larger. This, which might seem to be a part of the peduncle, or at least

the base upon which the flower was constructed, is not so, but an essential part of the flower, as we shall see hereafter. Let us now suppose that we hold the flower of a fuchsia erect, that is, the reverse to the way it generally hangs on the plant; we find the ovary—for such is the organ we have just alluded to as terminating the peduncle—surmounted by a tube which terminates in four lobes. This is the calyx, and most external part of the flower. In the fuchsia it ise generally red or white or some variety of flesh color, in this particular differing from most other flowers, in which the calyx is mostly green. Passing inward, that is, towards the centre of the flower, we find four colored leaves attached to the side of the tubular part of the calyx, and alternate to its lobes. In the variety of fuchsia we are examining (Venus de Medici) they are of a beautiful purple; these are the petals, and taken collectively are called the corolla. Such a corolla is called polypetalous in contradistinction to monopetalous, where the petals cohere and become united, so as to form one piece, as in the bell-flower; the calyx and corolla together are often spoken of as the floral envelopes. Proceeding still to the centre of the flower, we find eight thread-like organs, like the petals, inserted into the tube of the calyx, and terminated with little two-celled cases. The thread like body is called the *filament*, and the little case the *anther*, which together are called the *stamen*. The anther contains a dust-like or powdery matter called the *pollen*, which is of great importance in the economy of vegetation. A stamen, then, consists of the filament, the anther, and the pollen; but plants are to be met with whose stamens are without filaments, in which case the anther is said to be sessile. We now arrive at the central organ of the flower, namely, the *pistil*. In order to examine it properly, let us remove the calyx, that is, cut it off at the place where it is attached to the ovary, and in doing so not to cut through, but preserve the pistil untouched. Having removed the calyx and with it the corolla and stamens, we have now remaining the pistil. It consists of three parts, viz., the german or ovary, the style, and the stigma. The name of german or ovary is given to the lower portion, which, when arrived at maturity, is the fruit. By cutting it through we will perceive that it consists of four compartments, which are filled with embryo seeds. The long thread-like portion of the ovary is called style, and the swelling at the summit, which, like the ovary, indicates four divisions, is the stigma.

We have now examined the flower of the fuchsia, and found it to consist of a calyx and corolla, stamens and pistil, which organs are, with few exceptions, found in the flowers of what are considered the highest or most perfectly organized plants; but as we descend in the vegetable scale we find one or more of those organs wanting, and cases are to be met with where a single stamen or a single pistil constitutes a flower, and as we descend still lower, all traces of a flower disappear, or at least of such a flower as we have indicated as characterizing the great division of the vegetable kingdom known as the class of phenogamous or flowering plants.—*Irish Farmer's Gazette.*

Planting Chestnut for Timber.

Young, second growth chestnut trees, make excellent fencing and other timber—and if, in addition, it be cut in summer, (whether with or without regard to the age of the moon, no matter which,) it will last a long time. John Johnston of Geneva, finds second growth chestnut best for his fence posts—old trees he regards as of little value.

Chestnut trees, on light soil, grow very rapidly. Any farmer who has a few acres to spare, may make a very valuable investment by planting a chestnut orchard. The best way to do it, is to take a field that is suitable for some cultivated crop, corn for example. Plow two or three furrows together into a ridge twelve feet apart, over the whole field, either late in autumn, so as to admit of early planting, or else early in the spring. Plant the chestnuts along this ridge, three or four in a hill, about the same distance as hills of corn. They are difficult to transplant with success, or without check in growth, and therefore this mode secures vigorous young plants at once, thinning out all but one in each hill the following year. Plow the spaces between, and plant with corn or potatoes, and cultivate and keep clean the young trees with the rest of the field. If care is taken by using stakes, each hill of chestnuts may be made to stand in a row with the hills of corn, so as to cultivate whole field both ways. Or, if the corn is planted with a drill, it will not be necessary to take any care in this respect, as the cultivator will run one way only. This cultivation, if kept up for a few years, with crops of corn, beans, potatoes, carrots, &c., or with plowed stripes near the trees, and sowed grain between, which is not so good, will give a very rapid start to the young trees; and if they are thinned out in some years as they crowd, thus giving good stakes, they will, by twenty years, form a very valuable plantation—this being the age found most profitable to cut down the young timber for renewal. A great advantage of this plan is, the wagon used for drawing off the timber may be driven between the rows in a straight, smooth road, and not as in common irregular woods, with constant twists and turns to avoid hitting trees, stumps or roots.

Many fail in raising the chestnut from seed, because they allow the shell of the nut to become dry. Take fresh chestnuts in autumn, and mix them with slightly moist leaf mould, and leave them exposed, out of the reach of mice all winter—they are best if in contact with the

moist ground. Then, as soon as they begin to sprout in spring, plant them two inches deep.

Locust trees may be planted in the same way with corn, but nee not be planted betore the corn itself, as they will not sprout without scalding; for this reason they are more easily managed. They make admirable timber, when not injured by the insects — *Country Gentleman.*

The Apiary.

Bee Culture in Canada.

TORONTO, Sept. 26th, 1861.

To the Editor of the Canadian Agriculturist.

SIR,—Having recently arrived in Canada from England, where I took considerable practical interest in the improved management of the Honey Bee, I should be greatly obliged, if any Canadian beekeepers would favour me, through your columns, with the result of their experience in Canada;—stating the system they found most profitable, the average yield of honey, the best time to stock an apiary, cost of stocks, or swarms, and any other particulars which might be useful.

By kindly inserting this letter in the next number of your useful journal you will confer a favour on

Yours, truly,

APIARIAN.

[Bees are not generally kept by farmers in Canada, although we have been assured by experienced persons in that line, that they might be so profitably. Clover, buckwheat, &c., are tolerable substitutes for the heather and field beans of the old country, from which bees extract the best materials in secreting honey. We observed a jar of very fine honey at the Provincial Exhibition, at London, the other day, belonging to Mr. G. Miller, of Markham. We shall be happy to hear from any of our readers, who are beekeepers, in reference to the information requested by our correspondent.—ED.]

Transactions.

ESSAY ON THOROUGH DRAINAGE.

BY MR. GEORGE SMART, OF BOWMANVILLE.

Read before the West Durham County Agricultural Society.

To the President, Vice President, and Directors of the Agricultural Society of the West Riding of the County of Durham:

GENTLEMEN.—I have had many aplications for information on the subject of farm drainage, from several of the enterprising agriculturists of this section of the country, who, no doubt, thought that as I was interested in the manufacture of drain tiles, I ought also to be able to give such information in reference to the principles of farm drainage as would enable them to estimate, nearly, what amount of drainage they would require to put their farms in a proper state of cultivation, and rid them of that, I may say greatest of all nuisances in connection with the farm, viz.,—a superabundance of surface water.

But, however willing I might be to do so, I have found it impossible, in course of conversation, to give any adequate idea of what would be required, or to give anything like reliable information, as there is such a variety of causes and effects, so intimately connected with and bearing upon the subject, which require a good deal of consideration and reflection in order to arrive at anything like a correct estimate of what actually would be necessary under various circumstances, and in a variety of soils.

But having no desire to withold any information of which I am possessed, or can obtain in the perusal of standard works in connection with the subject, I am willing to impart it to others, if by so doing I should be the means of forwarding the cause of Agriculture in this section of the country, in which I have for many years past taken a deep interest.

It has been suggested to me, that in order to treat this subject fully, I would not only be required to be thoroughly conversant with its principles, but also to be something of a geologist, and well acquainted with the scientific terms made use of by persons writing on the subject. This, certainly, is a difficulty; but, as I make no pretensions to a great amount of scientific research, I merely intend to state as clearly as possible, and in plain terms—such information as I have been able to gather, and quote occasionally from the writings of scientific men, such matter as I think will be useful and instructive, in order that the lack of information in regard to the principles of farm drainage as applied to this portion of the country, may be at least partially overcome.

Farm drainage is a subject which is becoming of more importance to this country every year, and I believe that farming, on

cleared land, I mean land free from stumps, which has been cultivated for a number of years, (particularly clay soils,) cannot be made to pay a full profit without under draining: and that all such farms (and there are many of them) in this section of the country, would be greatly improved, even if they were drained to that extent which the limited means in the hands of our farmers would allow. This, in my mind, is no longer a question of doubt; and it has also been proved satisfactorily by a number of persons who have given it a fair trial. And I would merely say to those who are still skeptical, either as regards the advantage or profit of underdraining land:—make a fair trial of a small piece of drain, on any land which has has hitherto been good for nothing on your own farms, and if the drain does not pay for itself, if properly constructed, during the first four years the land is in crop, it will be the first case of the kind which has come under my observation; and I feel satisfied that farmers who have the means, cannot find a more safe or profitable investment for their money than by improving their farms in this manner. The experience of some of the best farmers in Britain. in the absence of all other proof, would be sufficient to show that capital may be more safely invested in this than in any other way. For after very large expenditures have been made by farmers in Britain, amounting to millions of pounds, it has been clearly proved that the increased profit from what is termed partial draining is sufficient in a few years to pay the expense, even of thorough draining, thus leaving their farms permanently increased in value, to the amount of the total cost, while the income is augmented in a still greater ratio. And an eminent writer on this subject says: "It is quite doubtful whether Britain could now sustain her population, were it not for her system of thorough drainage."

It has been a source of gratification to me to observe, that prominent agriculturists in this country are becoming alive to the advantages to be derived from draining, and I have also been much interested and edified by the perusal of several well written articles, which have appeared during the past year or two in the publications of this province from the pens of gentlemen of high standing, who would wish to arouse and stimulate farmers to take action in this matter.

It is a new subject, comparatively speaking, in this Province, and which is not well understood; and I may say there are but few capable of teaching its theory and practice, yet many farmers are awake to its importance, and are eagerly seeking information in reference to it. Many are already endeavouring to drain their land, conscious of their want of the requisite knowledge to enable them to do so in a proper manner, but who are, nevertheless, willing to run all risk rather than plow and sow portions of their land year after year without even reaping enough to pay for the seed. I have often thought a treatise on this subject much wanted, one which would contain an elementary and thorough exposition of the principles upon which Canadian farmers ought to drain their lands, as compared with some of the systems adopted in other countries, one which would tell the man who never saw a drain tile, what thorough drainage means, and which would convey to those who have studied the subject from British authors only, the difference in the climate and soils, in the price of drain tiles, labor, &c.; which must modify our operations in this country to a certain extent, compared with England, Scotland, and Ireland. And although, as I have previously stated, I do not pretend to be possessed of any great amount of ability to treat this subject fully, still, I think I may be able to bring before you a few comparisons and suggestions, which, in the present lack of information, may not be altogether useless.

In the first place, then, let us trace the progress of farm drainage from the days of old, and review some of the principal systems which have been adopted, for that purpose in modern times in Britain, and partially in America. So far as I can learn, the ancient Romans were not what might be termed far-famed agriculturists, although, no doubt, there were many eminent men among them. You are no doubt aware that they were famed for sculpture, and for ingenuity in various branches of mechanics. They were also great manufacturers of pottery or earthenware, and amongst the rest of the articles they were in the habit of manufacturing from their mother earth, I observe that they made pipes, not tobacco pipes, I presume, because they were used for the purpose, as is said, of conveying water from place to place, that is, as aqueducts. I cannot find anything which would lead me to sup

pose that they used them as a means of drainage, although they are said to have drained their land. Some of the old Roman writers have given minute directions for forming drains of various materials, such as stone, timber, bundles of brush, straw, &c. So you will perceive that even at that time draining was considered worthy of attention by eminent men; and no doubt was carried on extensively, and profitably, in those days, as well as now, although not to the same state of perfection.

Nothing is mentioned by British authors of anything having been done in reference to land drainage in England, Ireland, or Scotland until the year 1650, when a gentleman named Capt. Walter Bligh published a work setting forth the great advantages of draining as applied by him to water meadows and swamps, and as being applicable to all moist lands. Nothing is mentioned by him of drain tile having been used for that purpose. But subsequently, however, in a note of Stephens' on draining and irrigation, we find the following statement and opinion. "In draining the park at Grimsthorpe, Lincolnshire, some tiles were found 8 feet under the surface of the ground, and were similar to those now used for the purpose of drainage, and although they must have been in the ground over one hundred years, they were in a perfect state of preservation." I cite this note more particularly to show and convince those who are sceptical as to the durability of tiles, that they have been found to stand that time and that there need be no fear in adopting them as the means of drainage.

The first account we have of anything like a system of drainage, is what is known as the Elkington system. It appears that in the year 1795, at the request of the Board of Agriculture, the British Parliament voted to Joseph Elkington, an English farmer, the sum of £1,000 for his valuable discoveries in the art of draining land, the details of which were brought before the world at that time by Mr. John Johnston. Mr. Elkington's fame as a practical drainer is said to have quickly and widely extended and he was very generally employed throughout England for many years afterwards, particularly in the Midland counties, of which he drained thousands of acres successfully, and although much of the land was previously of no value, it is said to have become the most valuable land in that section of the country, producing the most valuable kinds of grain, and affording the richest pasture for stock.

James Smith of Deanston, Stirlingshire, Scotland, next after Elkington, in point of time, was the prominent leader in drainage operations in great Britain. His peculiar views came into general notice about the year 1832, and in 1844 he published the seventh edition of his remarks on thorough drainage. He is said to have been the first advocate of any system worthy of that name, because instead of the few deep drains cut with reference to particular springs or sources of wetness adopted by Elkington, Smith practised a systematic operation over the whole field, at regular distances, and at shallow depths of about three feet, according to the level. He considered that much more injury arose from the retention of rain water in the soil than from springs, while Elkington's attention seems more particularly to have been directed to springs as the source of the evil. Both theories, however, may have been correct, as suited to the general character of the soil on which they were adopted. Smith's system may be given in a few words. He says the drains should be made parallel with each other, and at regular distances apart, and should be carried throughout the whole field without regard to the wet or dry appearance of the soil—the principles of this system being, the providing of more frequent opportunities for the water rising from below, or falling upon the surface, to pass completely off, with greater facility, through the numerous drains, which he says may be constructed with various materials where tiles cannot be obtained conveniently, such as brush, or faggots, tied together in bundles, stones, timber, &c.; but he further adds that where drain tiles can be got, they are decidedly superior to any other material now in use, as they are not only found to answer the purpose better, but are more durable, and not so liable to get choked up, or get out of order, as the drains are which are laid with the other materials mentioned. This system of Smith's has been adopted to a considerable extent. Throughout England and Scotland it has been found to be very efficient, and beneficial in its effects, more particularly in heavy and wet clay soils, which obtain to a very great extent in many places both in England and Scotland, and by which millions of acres of such have been reclaimed from almost a state

of worthlessness, to be the most valuable land for agricultural purposes.

Some years subsequently, however, we find Mr. Josiah Parks before the agricultural world as the author of several essays on the philosophy and art of drainage, and of many papers on the subject which were published in the Journal of the Royal Agricultural Society, in which he held a high position. His views differ in some respects from those of Smith—first, in as far as he advocates a less frequent system of drains, at intervals varying from 21 to 60 feet, with preference for wide intervals, and deeper drains at a minimum depth of 4 feet, designed with the two fold object of not only freeing the active soil from stagnant water, but of converting the water falling upon the surface into an agent for fertilizing the soil; and he deemed no system efficient that did not both drain off the water falling upon the surface,and keep down the subterranean water to a depth exceeding the power of capilary attraction to raise it too near the surface. He coincides with Smith in regard to running the drains parallel with each other, but claims that the advantage of increased depth compensates for the increase in width between the drains. He also gives it as his opinion that pipes, or tiles, are the best known materials for the purpose of agricultural drains. The most material difference between the systems adopted by these two leaders of what has been termed rival systems, are, while Smith advocates drains of 2 or 3 feet in depth, at from 10 to 24 feet apart, Parks contends for a depth of not less than four feet, with a width between of from 20 to 60 feet, the depth compensating for the increased width. Mr. Parkes at first advocated the use of pipes of only the inch bore, and also that land could be drained by his system at an average cost of about fifteen dollars per acre, but subsequently he is said to have modified his ideas, both in regard to the size of the tiles and as to the cost of drainage per acre, which he afterwards fixes in his estimates as ranging from fifteen to thirty dollars, according to the nature of the soil and other local circumstances.

No doubt, both of these systems are worthy of our consideration, as they have been extensively practised in Britain, and from any information I can obtain in reference to them, I find that both have their advocates, and are the systems generally adopted where thorough drainage is carried on extensively. I am inclined to think either of the two would answer the purpose, and might be adopted according to the nature of the ground to be drained, or the depth from the surface at which the water bed is found, which in this part of Canada is generally between what is termed the subsoil and the hardened clay, and is formed by a strata of sand, or sand mixed with limestone gravel, varying in thickness from half an inch to four or even six inches. But on many farms, more particularly upon what are termed old farms in this country, is to be found in many cases, another description of waterbed, which is the result of a bad system of cultivation. I have reference to the hard formation frequently to be found at the bottom of the plow-furrow in clay soils, which is very injurious to crops, as through it water can scarcely penetrate, and therefore has to lie at the bottom, at the roots of plants, until it is dried up by evaporation, the effectual cure for which is a thorough application of the subsoil plow. But this is not the real water-bed to which I wish to call your attention, but merely a hard formation of clay of about 1 or 2 inches thick, made by the frequent action of the plow sole at the same depth for a number of years in succession.

The real water-bed is generally about 3 to 4 feet below the surface, and through it the water percolates, and on drained soils finds its way into the drains, which should be constructed a little lower than the water-bed, so that they may draw the water from both sides. But on underdrained soils it has to find its way to some lower level, where it oozes out upon the surface, it may be on the face of some distant slope, in the form of springs, or it may accumulate at certain seasons of the year in the hollows or low places, where it becomes stagnant, not only destroying the vegetation of any crop which may have been sown in such places while comparatively dry, before heavy rains, but in consequence of which, after the water has been removed by evaporation, a lot of noxious weeds spring up, the seeds of which are carried far and near by birds, and even by the wind, and deposited on alluvial soils, where they spring up and become a source of great annoyance to the agriculturist.

But to proceed. Another system called the Keythrope system has been adopted in some cases in England, the peculiarities of which consist in this, viz., that the parallel drains

are not equidistant, and that they cross the line of greatest descent; the usual depth is three feet and a half, but some are as deep as five and even six feet. The depth and width are determined by digging trial holes, in order to ascertain not only the depth at which the bottom water is reached, but the highest to which it will rise in the holes, and the distance at which a drain would lay the hole dry. It is claimed for this system by its advocates that it is far cheaper than any other, because its drains are only laid in the places where by careful examination beforehand they are found to be actually necessary, and that it is a great saving of expense when compared with the system of laying the drains at equal distances throughout the field.

I think in reference to this system that it is no improvement on its predecessors,—first, because it is now generally acknowledged by practical drainers, that the drains should run with the greatest line of descent, and not across it, as recommended in this system, —then, again, I think, according to the depth specified, that it would cost as much if not more to drain by this system, which cannot be called a system of thorough draining, than it would cost to thorough drain at an average depth of 3 feet.

There is yet another system to which I will allude. It is termed the Wharncliffe system, and is a combined system of deep and shallow drainage, the principles of which are as follows, viz.:—

He says that in order to secure the full effect of thorough drainage in clay soils, it is necessary that there should not only be well laid conduits for the water which reaches them, but also subsidiary passages opened through the substance of the close subsoil by means of atmospheric heat, and the contraction which ensues from it, the cracks and fissures which result from this action, are reckoned upon as a certain and essential part of the process. And to give efficiency to a system of deep drains beneath a stiff clay soil these natural channels are required. To produce them, there must be a combined action of heat and evaporation. He further goes on to say that if we drain off effectually and constantly the bottom water from beneath the clay, and from its surface as far as it admits of percolation, and by some other means provide a vent for the upper water, which requires nothing more than facility to run freely, there seems good reason to suppose that the object may be completely attained, and that we shall remove the moisture from both portions as effectually as its quantity and the substance will permit.

Acting upon this view then, after due consideration, he says, "I determined to combine with the fundamental four feet drains, auxiliary ones of much less depth, which would do their work above, and contribute their share to the wholesome discharge, while their more subterranean neighbours should also be steadily performing their more difficult duty." He then goes on to state that he accomplishes this by placing his four feet drains at a distance of fifteen to twenty yards apart, and then leading others across at a depth of two feet from the surface, at a distance of eight or ten yards apart, and at an acute angle with the main drains, at the junctions with which the two feet drains were either to be sloped down so as to run into the main drains at the same level, or if not so sloped down that the water should be made to descend from the high to the lower drains, through a few loose stones placed perpendicularly from the one to the other.

I believe that this system might work well in Britain, but I do not think it would answer in this country, for two reasons, first, because the two feet drains would be liable to be frozen up solid every winter—and, secondly, because the subsoil plow, which is coming more into general use every year, by our best farmers, runs to so great a depth as to be liable to destroy the two-feet drains at the first application. And even if the plow was not run to a greater depth than 15 or 18 inches at an average. any person who has held a subsoil plow must know from experience that it is an implement somewhat unmanageable, and liable to plunge deeper into soft places, such as the covering of drains, so that I am of the opinion that no skill or care could prevent it from injuring two feet drains.

By these systems, however, a great deal of good has been done in England, Ireland, and Scotland, during the past thirty years. Each has had its supporters, and I have no doubt that different soils, having various strata, and lying, as regards inclination, in numberless positions, require different systems of drainage, and no doubt the great incentive in getting up these various systems has been the object of securing the best system at the least possible expense.

Having brought to your notice some of the systems adopted in Britain, let us glance for a little at what has been done in America in regard to this important work, and, to commence at the beginning of its history, I will have to draw your attention to it, at its first introduction in connection with agriculture in the United States. I presume, from any information I can obtain in regard to the matter, that the first person who began draining operations, with tiles, which I consider as the beginning of draining operations in any country where practised systematically, was Mr. John Johnstone, of Seneca County, in the State of New York, a Scotchman by birth, who commenced operations about the year 1835. He is said at first to have got drain tiles made by hand, and set the example of using them on his own farm, the effects produced by which were so evident to every one who had an opportunity of witnessing the way in which they operated, both upon the soil as regards cultivation, and the increase of produce, &c., that many intelligent and industrious farmers commenced operations also. The demand soon became so great for tiles, that a gentleman in the same county who held a high position in agricultural matters, imported a machine for the purpose of manufacturing them, at less expense than they could be made by hand, and of various sizes, which were then seen to be necessary, according to the amount of water requiring to be carried off. Since then, draining operations have been carried on very extensively in that section of the country, and several interesting publications, containing statements of many successful operations, and giving much useful statistical information in reference to the subject of farm drainage, have been published from time to time by Mr. Johnstone, and several other gentlemen of experience and ability, showing forth the principles upon which they have drained their farms, and the success which has attended their efforts from time to time in so doing. In fact, it is from this source that much of what is known in this country in regard to drainage has been obtained. Tile yards have since been established in many different places throughout the States, which have been manufacturing hundreds of thousands, even millions, annually, of both horse shoe and pipe tiles; the horse shoe tiles were at first most extensively used, but of late years the pipe or sole tiles are preferred.—Other materials have also been used with varied success throughout the States, such as stones, and wood of different kinds, put down in various ways; but it is generally acknowledged that where drain tiles can be got conveniently, and at moderate prices, they are, after all, the best and most economical means of drainage yet discovered. It is true drainage has not been carried on to anything like the extent, or efficiency, in the States, which it has attained in Great Britain but sufficient has been done to show, that farmers there also are becoming aware of the great advantages to be derived from a cheap and efficient means of drainage, and they are now forming themselves into joint stock companies for the purpose of manufacturing drain tiles for their own use, in sections where it would be difficult to get a person to invest his money in establishing a tile manufactory, and run the risk of being able to make it pay, without having the farmers in the surrounding country directly interested in its support. Such, in my opinion, is the way in which tile making establishments ought to be got up in new countries, and the farmers in connection with the work would then be able to get what tiles they required at first cost. And on the other hand the tile maker would be in a better position, as, in either case, whether hired by the day, month, year, or by the thousand, they could count with some certainty upon making a living, whereas in the position in which many of them have found themselves, after having spent the principal part of their money in getting up an establishment, they could not find sale for one-fourth part of the tiles they could manufacture. And to enable them to live they have had to add a living profit to the cost of those they have been able to sell. I mention this particularly, because it affects the interests both of the farmer who wishes to drain his land, but cannot afford to do so in consequence of the high price of tiles, and of the tile manufacturer, because with the present demand, even at the high prices, he can scarcely make both ends meet.

I feel satisfied that tiles could be reduced in price from 25 to 50 per cent from the present rates, were farmers to go about it in the right way. They could do it either as I have stated by joint stock companies, or, where tile works have been established, by a number of farmers making up their minds in spring what amount of tiles they would require during the summer, and deputing one of their number to make arrangements for getting them manufac-

tured. Or it may be done through the Township Agricultural Society, in the same manner in which subscribers sometimes obtain plaster for their land at a cheap rate, or are enabled in many cases to procure seeds of various kinds. A fund might be subscribed for the purpose of procuring drain tiles, in the same way in which it has been done frequently for the before mentioned purposes—until some action be taken by the Legislature of this province, similar to that which has been taken in England, having for its object, the encouragement of drainage.

I merely mention this matter here because I find that the Americans have used the various means I have described, to assist them in surmounting some of the difficulties against which they have had to contend in their operations in drainage and in consequence of which they have been enabled, to progress with the work more rapidly than they could otherwise have done, under the high rates of wages and tiles, against which they formerly had to contend.

Let me now draw your attention for a few moments, to what has been done in Canada in reference to this important work. And in order to do so we have to look back some twenty odd years, previous to which very little had been done in regard to drainage in connexion with the farm. About that time however, some of our farmers having friends in England, or in other countries where the beneficial effects of drainage were becoming better understood,—frequently received publications from them in which the subject was treated ably, and in which the opinions of scientific men were given, setting forth the advantages to be derived from it.

In this way therefore, and by conversation with parties who had an opportunity of seeing its operation in other countries, many were induced to make a trial of small pieces of drain in some of the low wet places or runs on their farms, the advantages of which soon became apparent to those who had constructed them, and also in a great measure to sceptical neighbours, who when the drains were being constructed were of opinion that it was only so much money thrown away, but who were in many instances through force of example induced to try the operation on their own farms, after which they were no longer sceptical either in regard to the utility, or profit, of drainage, as applied to such places. Very little progress was made however for some years afterwards, or until about fifteen years ago, when several prominent agriculturists through the province commenced operations on a large scale—but not even then, on anything like a system of thorough drainage.

Very little more has yet been done, particularly in this section of the country, than to relieve some of the fields by running drains in low places or cutting off water flowing from springs, &c.

But this may be accounted for in various ways; first, because it is, comparatively speaking, a new settlement, as compared with some of the first, and more wealthy settlements in the province, and has not until a few years past been sufficiently cleared to admit of draining operations to any great extent. Secondly, because the greater part of those who had their farms sufficiently cleared to admit of drainage previous to the crisis of 1857 and 1858 seemed to be more actuated by a spirit of acquiring more land, even at very high prices, than of improving that of which they were already possessed. This I am aware has been the case to a considerable extent, the consequences of which have in many cases been almost ruinous to the parties themselves. And to this in a great measure, I attribute the general depression which has prevailed in all descriptions of agricultural improvement for some time past, in this part of the country.

Still there are some cautious enterprising farmers, who have been steadily improving their farms by draining, as well as others who have found it to their interest to do so, and from past experience have become convinced, that before they can count with any degree of certainty upon good returns for seed and labour, they must first get rid of the surface water on their farms, and put them in such a position that they can get to work, as early as possible in spring, and not have either to sow their grain in pools of water, thereby losing both seed and labour, as too many are in the habit of doing, year after year, or else wait till the land dries by evaporation, which very frequently does not take place for weeks after the seed should have been sown, and in consequence of the cold, and wet state of the soil, the crops are retarded in growth, and when the drouth of summer comes upon them they become yellow, and are more subject to blight and other evils to which early crops on well drained soils are not exposed. And I am satisfied, were the

principles of land drainage and its effects better understood, by the majority of our farmers, greater exertions would be made by them, to put their farms in a better position, in regard to this most important work in connexion with agriculture.

It is now about 16 years since the first drain tiles were made in this part of the country; they were made by hand at the Bowmanville pottery, and were used by John Smart, Esq., on his farm at Port Darlington, and after a fair trial, he found them to be the best, although not the cheapest material for that purpose at that time. And although he had previously drained with cedar to a considerable extent, still by taking into account the difference in the durability, he adopted the tiles in preference to the cedar, and continued to use them for a number of years, until he changed the nature of his farm from that of a wet cold clay, which he could never begin to labour in spring until it was almost too late to sow, and in consequence of which the crops were very often rusted and almost worthless, to that of a rich mellow clay, which can scarcely be equaled in this section of the country for producing any kind of crops. In regard to the cedar drains which I have stated Mr. Smart had constructed fifteen or twenty years ago, they now cave more or less every year, and will soon be useless altogether.

I am aware that some persons will scarcely think it possible, but it is nevertheless true, that I have examined the drains and found the cedar in many places completely decayed, by what is termed dry rot, not by wet rot, as it would be almost natural to suppose, and in many places nothing now remains to uphold the soil, and the drains are frequently being broken through even by animals passing over them. So much then for cedar drains.

The next gentleman who commenced draining operations after Mr. Smart was the Hon. S. Simpson, a gentleman of high standing and of considerable energy and ability, who having become possessed of a nicely situated farm in the vicinity of Bowmanville, determined to make it second to none in this country, either as to its general appearance, or capability of producing crops. But finding many portions of it cold and wet, in consequence of which it would not produce good crops, he determined to commence draining; and in order to obtain drain tiles at a cheaper rate, than they could be made for, by hand, he was the means of importing the first machine for making tiles into this part of the country, since which, he has spared no means necessary to put his farm (comparatively speaking) into a good state of cultivation in regard to drainage. Mathew Joness, Esq., another prominent agriculturist in this section, has also done much to improve his farm in this respect.

There are many others whom I might mention who have not hesitated to follow a good example in regard to this important work. But suffice it, to say, that through the example of those gentlemen whom I have mentioned, many have been induced to improve their farms by what is termed partial drainage.

The gentlemen mentioned were at that time considered high farmers, and it was supposed by many, that they had more money than they knew how to make a good use of, and that it was, as it were, throwing money away, which supposition however has proved erroneous, as even by the small amount of draining they have done, compared with that which it would yet pay them to construct, they have established the fact, not only in their own minds, but also in the minds of many farmers around them, that it will pay to drain, and that, on land drained partially, the farmer can commence operations a week earlier in spring than on undrained soils. This is of itself a great advantage when we consider the shortness of our seasons, even were crops on drained land not more sure than on undrained land, of which there is not the least doubt, and that the produce is frequently from five to ten bushels per acre more in consequence of even partial draining. These facts, as I have already stated, have been established in the minds of many, but I cannot say in that of a majority of our farmers, many of whom, although possessed of means to enable them to drain, yet because they cannot see that the money laid out in that way would yield them interest equal to what they are very frequently promised for the use of their spare funds, will not even give it a trial. Many farmers also I, have no doubt, are ignorant of the fact, that a great change takes place in the soil, after it is cleared of stumps, and that the chemical properties formerly existing in the vegetable matter become exhausted. But it is a well established fact, that the soil becomes more retentive in its nature and also more compact, consequently it requires more care and attention, both as regards nourishment, drainage, subsoiling and many other

matters, which are not requisite while the vegetable mould is upon it in order to produce a good crop. And many who consider themselves good farmers may be ignorant also as to the cause of deterioration in the produce of their farms compared with what they formerly yielded, or the cause of winter killing in their fields, the cause of blight, the cause of the early and late frosts, which have for some years past affected our crops to a considerable extent in this and in many other sections of the country. And no doubt they would remain so if some kind friend did not draw their attention to the fact, that these evils arise in a great measure from the amount of surface water which they allow to accumulate on their fields, and that this system can be alleviated by a judicious system of drainage which would not only have the effect of drying the soil, but also of raising the temperature of the surrounding atmosphere, the benefits of which must be very evident to any thinking mind. But there are other matters in connection with, and bearing directly upon this subject, which I will attempt to bring before you in such a manner as to enable you to understand them:

The first is the fertilizing substances contained in rain water.

Rain water is the source of surplus moisture, or what is generally termed surface water, a superfluity of which is the principal of the evils, against which we contend in land requiring drainage, but it is said to be a great source of fertility, not only because it affords the necessary moisture to dissolve the chemical ingredients of the soil, but because it contains in itself valuable fertilizing substances.

In an article by Mr. Caird, in the Cyclopœdia of Agriculture, on th erotation of crops, he says, the surprising effects of a fallow, even unaided by manure, has received some explanation by the recent discovery of Mr. Barrell, viz:

That rain water contains within itself, and conveys into the soil fertilizing substances of the utmost importance, equivalent, in a fall of rain of 24 inches per annum, to the quantity of ammonia contained in 200lbs of guano, with 150lbs of nitrogenous matter besides, all suited to the nutrition of our crops.

This being the case then, and taking even the low average fall of 34 inches of rain per annum as a criterion, how careful ought farmers of heavy clay soils, to be in having them made sufficiently porous to enable it to perculate through them, instead of running off them, so that these nutri ious substances may be extracted from it, by the soil through which it would have to pass to the water bed underneath.

Rain water is also said to contain in solution, air and carbonic acid, with ammonia. The first two ingredients are amongst the most powerful disintegrators of a soil, or in other words they contain the properties required to dissolve the chemical ingredients contained in all soils which, when dissolved, become fertilizers also. By this then we are led to see that the rains bring us not only water for the use of man and beast but also food for our plants. And what I wish to impress most forcibly upon your minds in connection with this matter is, first, that while you should remove by proper drainage, the surplus moisture from your land, you should also take care to conduct it through the soil far enough to extract from it the fertilizing substances it contains. And secondly, see that it is removed to such a depth that it will not prove injurious to the roots of plants, as they require warmth as well at the roots as on the surface in order to enable them to grow with vigor; in short that which constitutes the science of draining, is to have a knowledge of the depth to which drains ought to be laid in order to drain off such water from the water-bed, and not allow it to remain to keep the soil cold.

Evaporation is another great agent which we ought not to lose sight of, in connection with this subject, as it is a most powerful one in connection with drainage, and to it we are indebted for the beneficial effects produced on all soils, but more particularly are its effects remarkable upon soils which are drained, both tending to increase the temperature of the soil during summer, and in consequence to increase the growth of crops, so that they come to maturity earlier and are thereby not so liable to be injured by many of the evils to which late crops are subject. Of the value of these considerations then, let the farmer who has lost more or less of his crops every year make his own estimate. Perhaps he may come to the conclusion that there is more truth in the theory and practice of drainage than he at first imagined and that even in the effects produced by evaporation, he may find a subject of much importance, well worthy of consideration.

Evaporation takes place at any point of temperature from 30° , or even lower, up to 212° , at which water boils. It is increased

by heat, but not caused by it at all times, as an apparently cool wind will very often cause more evaporation than takes place in many instances under a higher temperature of the atmosphere. When the weather is warm and genial, and as I have already said, that the temperature of the soil when drained is higher than it was previously, it must follw that the power of evaporation is also greater, in proportion to the difference in the temperature caused by drainage, by which then you will perceive that evaporation is enabled to perform the work of preparing the soil for the seed, making it dry and mellow with greater rapidity on drained, than on undrained soils, and both working together have a very beautiful effect upon the soil.

Having directed your attention to a few of the systems of drainage as practised to so great an extent in Britain, and also in the United States to a considerable degree—together with a sort of digest of what has been done in this section of our country, and having attempted to show the effects of rain, drainage, and evaporation upon the soil, I will now proceed to show you that although draining has been carried on to such an extent in Britain, it is not because the land requires it more there, owing to a greater amount of moisture or rain than we have to contend against in this country, but, on the contrary, it has been clearly proved by scientific observations that there is a greater quantity of rain during the year in America than in Britain. It is computed that the average annual fall of rain in England is as follows, viz. In the eastern portion it is estimated at 20 inches, midland, 22 inches, and western 35 inches, whereas in this country and in the northern and Eastern States the average annual fall amounts to about 40 inches. The rain also falls more moderately in England than it does in this country. They seldom have such deluges of rain as we have here, flooding the land to the depth of several inches, and, on undrained lands, frequently lying in small lakes for days afterwards. By this you will perceive that this country, compared with England in regard to the amount of rain, should in reality require more drainage to keep the soil in a proper state than is required in England; because, as already stated, the rain falls more regularly there and never in such quantities in a single day, and also because, there, the soil is open the most of the winter, so that it can be worked almost every day with the plow. While in this country for several months our fields are completely locked up in frost, in consequence of which our work in spring has to be done in a few days—and often very superficially on account of the wet state of the land. But I would remark, although speaking in general terms of this country requiring more drainage than England, still I do not wish you to understand me to say that all lands even in this country require drainage. On the contrary, I am fully convinced that there is a great deal of land in this, as well as in other countries, which does not require artificial drainage; it having naturally porous subsoil through which the surplus water may find a free passage. And farmers ought to obtain a tolerably correct idea of the principles of drainage, so that they may be able to discern between soils which do not require drainage, and those that do. I would wish before leaving this part of our subject, to impress upon your minds this important consideration, that we should underdrain all the land we cultivate, which has not a natural drainage in itself. For you may depend upon it, that so long as this is not done, so long will we be troubled with winter-killing, rust, midge, blight, and all the other evils to which late crops are exposed.

But the main point to be considered is, will it pay to drain land in this country. We say under certain circumstances it will repay for a moderate outlay, but we must bear in mind that whatever outlay we make it ought to be considered as a permanent improvement, similar to the putting up of buildings on a farm, which pay for themselves ultimately, by saving grain, and waste in stacking, although not in one or two years. Still, in my opinion, a moderate outlay on draining will pay equally as well as buildings for saving grain—and will return good interest for the money invested, besides enhancing the value of the land permanently, to more than the amount so expended. By way of illustration let us bring out this idea,—say for instance that one of you has a piece of land, say 10 acres, worth $80 per acre, and that it pays you now in the way you work it a clear yearly profit of 6 per cent on the value.—Now suppose it costs one third more to drain it, the one-third of $80 is $26 66⅔, which is sufficient to thorough drain it, with drains at 40 feet apart throughout the field, which in many instances would not be necessary, as drains at 66 feet apart, or four rods—

would be sufficient in most cases, in this part of the country, and would only cost 30 cents per rod, about $18 per acre. But for sake of illustration we will take the figure at 26 66½ and see how much more each acre would have to produce in addition to what it formerly produced, to pay interest at 6 er cent. on the amount expended, which would be $16 56 yearly on 10 acres or $1 55½ per acre and in order to show the result clearly we will take a 7 year's rotation for example:—1st year potatoes at 1s 3d per bushel about 6 bushels,
2nd year wheat at 5s, per bush. 1½ "
3 year oats, at 1s 3d " 6 "
4th year barley, 3s. " 2⅝ "
5th year hay, 40s. per ton, 350 lbs.
6th year pasture, increase of which will pay.
7th year oats, 1s. 3d. per bush., 6 bushels.
I have not the slighest doubt this increase could be obtained, even were the figures half as large again. I think that those of you who have had experience in the benefits to be derived from a system of thorough drainage will agree with me in thinking that it is not over rated.

Now, on the other hand, we will see whether partial draining will pay. Taking again for instance a field of 10 acres, in which there may be a water run or runs to the extent of 40 rods in length, and 4 rods in width, which is very frequently the case; that is, supposing two roads on each side of the drain to be wet and springy, in consequence of which it has never produced more than half a crop, and has been worse to work than any other acre in the field; and the average yield on which, we will say, of wheat, for sake of calculation, has been about ten bushels, which, at $1, would be $10. Now we will take the cost of draining—

40 rods—cutting, laying, and filling, 15 cents per rod.....	$6 00
40 rods tile, or 650, at $10 per 1,000	6 50
	$12 50

Now we will take an average crop from the land, after being drained, 20 bushels, and the increase in yield by draining, 10 bushels, at $1, $10; which would pay within $2 50 of the cost of draining during the first year. I consider this estimate not over drawn, and believe if those who have drained such places had kept an account of the cost, and the increase in yield, they would, in most cases, bear me out in this calculation.

Who, then, that has been delayed, year after year, by the wetness of his land in getting his spring work done, or has had the troubles incident to cold wet seasons, will not see the necessity of draining every acre of his land by artificial drainage, which has not a natural drainage of itself.

Taking it for granted that it will pay to drain land, let me bring to your notice a few important considerations in connection with some of the modes of drainage, and first in regard to some of the leading features of the old open ditch and water furrow system, which I may say prevailed to a great extent at one time in Britain and even now in this country. No doubt, open ditches are often required in connection with the most approved methods of thorough draining, as receivers or outlets to tile or other covered drains. But taking them in connection with the water-furrow system, they have been found very objectionable in many ways. First, they are too expensive; the first cost of construction is much more than that of a covered drain, owing to the great depth to which they require to be dug before they will withstand the action of the frost and weather.—Secondly, they require too much attention to keep them clean, and in good order, as they generally require to be cleaned out at least once every year, and very often twice, in consequence of the accumulation of various substances carried into them, which, if not removed, would choke them up and render them useless.—Thirdly, they occupy too much land, and are an obstruction to good husbandry: no doubt this is the case, because if open ditches were opened at every wet place or water run in our fields, they would be found a great source of trouble and annoyance in the cultivation of the other portions of land, and would prove a harbour for weeds.—Fourthly, they, in connection with the high ridge and deep water furrow system, have the effect of impoverishing the soil, because the great quantities of rain or snow annually falling upon the soil must either be carried off by evaporation, filtration, or run off upon the surface; and by being carried off by the deep water furrows, the consequence is, that a large amount of the manure and finer portions of the soil is carried off also, and washed into the open ditches. These then, gentlemen, are some of the principal objections to open drains, and the water furrow system, which has been given up altogether in Britain for some years past.

It is acknowledged by all writers on this

subject, and also by practical drainers, that the drainage of land can be most cheaply and effectually done by means of covered drains, which, as I have previously stated, may be constructed with various kinds of materials. Stones, wood, brush, tiles, &c, have all been used for this purpose—of which, however none have been found so effectual, durable, or so cheap at last, as tiles. But I would by no means discourage parties from using the other materials, if they cannot procure tiles at a reasonable price, or convenient distance.

Let us now turn our attention to a few particulars in connection with the practical operation of laying drains, as this is a point upon which a great deal of ignorance is displayed in many cases. This, as well as every other work in connection with the farm, requires to be done systematically and with whatever materials are used. In the first place persons unacquainted with draining operations ought to consider what they require to do, and in the next place how they ought to do it; and a few suggestions many be useful on this point.

I would beg to observe, that in commencing to drain a piece of land, in the first place, it would be necessary to find the depth of the water-bed, after which find out where you are likely to find the best out-let for your main drains. Then in what direction to run them in order to carry off the water most effectually from the minor or branch drains, and see that sufficient fall can be obtained to do so. Then form a plan upon which to construct your minor or branch drains—which ought to depend altogether on the lay of the land; and if possible run the minor drains, with or against the line of fall, and not across it, either straight or angling, which at one time was considered the best method, but which has of late years been proved to be a fallacy, because on slopes, it is a well known fact that the different strata of soils crop out toward the surface in many cases. Where the drains are run across the slope, or at an angle along the face of the slope, they frequently, although put down to the water-bed, have been known to lose more water than they conveyed. And the water thus lost would ooze out upon the surface where the hard strata under the water-bed cropt out a short distance lower down the slope, or a few yards below the drain, where that hard strata came in contact with the surface soil.

We will now suppose that the engineering or laying out of the drains has been done with due attention to system, fall, levels &c., and that every main, sub-main, and minor drain, has been carefully staked out, and the fall in each correctly ascertained. This in all cases ought to be done previous to any commencement in digging, and if done properly will save a great deal of trouble from the drains choking, or flooding, for want of fall.

Now in regard to the work of excavation, it is now an established rule, that to begin properly it must be at the outlet, so that whatever water may be met with can pass readily away, and the outlet should be kept low enough for that purpose. If there is much fall it might be best not to take the main drain out the full depth at first, because although they ought to be the first opened, they must be the last in which the pipes are laid, and may cave in to a certain extent.

In opening drains the plow is frequently used for turning out the two first furrows deep, with good advantage, provided it is done with a good steady team by a good plowman who can guide the plow straight. If it cannot be done straight it would be the cause of a good deal of trouble, both in taking out the remaining portion of the soil and in laying the tiles, but there is no doubt that it is a considerable saving if properly done. A good ditching machine would be a great acquisition if such a thing could be got up, but there has been none got up that has been found to answer a good purpose on hard clay, or on gravely soils, and I presume we will have still to use the drain spades for some time to come, but I have no doubt that a machine for that purpose will eventually be constructed so as to do the work properly. I have frequently seen people in digging drains give themselves a great deal of useless work by digging them too wide, or at a width of 20 inches at the top and a foot at the bottom, instead of a foot at the top, and from 4 to 6 inches at the bottom, so that a person may just be able to stand in them to lay the tiles, with one foot before the other, by which they would save half the amount of excavation. This can easily be done if the proper drain tools are used, which can now be got at many of the hardware shops, and will pay for themselves in a very short time where much draining is required to be done.

After the main and minor drains have been opened, commence to lay the tiles in the upper branch or minor drain. By doing so you will be

able to finish the work as you proceed, and will be able to make your junctions properly with the main drains. There is another consideration which requires much calculation, that is in reference to the various sizes of tiles you may require in draining a field, according to the amount of water which requires to be removed by the various drains, and it is wisdom rather to put in tiles too large than too small.

When you commence to lay the tiles, place a flat stone or a piece of brick against the upper end so as to prevent the soil from entering the bore. And in order to facilitate the operation of laying the tiles, have them placed in a row, end to end, along the side of the ditch on which there is least earth, making use of none but sound ones, To prevent them from shifting about, and to keep the joints straight, a narrow spading, the width of the sole of the tile, is frequently taken out, of the centre of the bottom of the drain, about the depth of the tile, and in many cases the sides and top of the tile are covered with gravel, sods, straw, and in some cases small brush. I do not consider this actually necessary, because, if the tiles are laid properly, nothing can get in at the joints but water, and it percolates so slowly that nothing can be carried in with it. When the drains are filled in and completed—be sure not to allow water to run in a water furrow on top of them, but rather if possible have the drain top the highest land in its vicinity, so that the water will find its way from each side rather than straight down, which has a bad effect upon the drains. It would be found very useful if a plan were kept of the position or situation of all drains on the fields, as a reference in after years, when by the appearance of the surface you had lost track of their position, and required to find them in order to remedy any stoppage which might occur, and the cause of which it would be difficult to find out were this not done.

I cannot close my remarks on this subject without adverting to the universal interest and confidence of the people of great Britain, in the operation of land drainage. This is manifested by the Acts of Parliament which have been passed, having for their object the advancement and encouragement of drainage, by furnishing means at a low rate of interest, for a term of years, so that landlord ,or tenant, may take advantage of it, to bring their lands into a proper state of cultivation. The outly in many instances has paid both both principal and interest twice over, during the period for which the money was borrowed at first. And I have no doubt that were our government in this country to take similar action and provide a fund, at low interest, taking security on the property to be drained, it would be a great boon to the Canadian farmer, which many would take advantage of, and profit by, because every cleared acre would then be a producing acre; whereas under the present circumstances, a very large amount of cleared land is producing nothing.

Miscellaneous.

The Farmers' Best Friends.

BY A. HOLLOWAY, MOUNT BRYDGES, CANADA WEST.

Destroy not the birds;
They're the farmers' best friends;
For the little they spoil
They make ample amends.

Some fruit they will eat:
But grudge it them not;
For the good that they do
Should not be forgot.

They keep down the insects,
Whose rapid increase
Would injure our harvests,
Till harvests would cease.

With their songs they amuse
Our wearisome hours,
And their presence enlivens
The shadiest bowers.

Then forgive their slight faults;
They make ample amends;
And do not forget
They're the farmers' best friends.

Looking for Coal in Egypt.—After a ride of two hours we arrived at our destination, about thirteen miles from Cairo. On descending the pit, I found it had been sunk in a very recent calcareous formation, intersected with beds of blue marl, to a depth of 266 yards, which had been ascertained to be about 100 feet below the bed of the Nile; and that there was just as much probability of finding coal on the top of the Pyramids as there. Hastening my return, I found the Viceroy at Shubra, in the evening, playing cards with three comfortable-looking grey-bearded Turks, all of whom, with the exception of his Highness, wore large diamond decorations. When I entered, the playing ceased, and the Viceroy eagerly inquired if I had been down the pit. Answering in the affirmative, and that I

did not consider that there was the remotest chance of discovering coal in such a locality, he inquired the exact depth of the pit, and if in England coal existed at greater depths. On my replying that certainly coal had been found and worked deeper than the shafts at Tourrs, he struck the table such a blow with his fist, that the shock sent the cards flying up, exclaiming, while fire darted from his eyes' "Then I'll sink a thousand pards" I made my salaam; and rising, left the old Turks nearly in the same state as the trees in the petrified forests.—*Egypt. the Soudan, and Central Africa. By John Petherick, F.R.G.S.*

Light in the Sea.—A paper on the nature of the Deep Sea Bed, by Dr. Wallich, was read at a recent meeting of the Royal Institution of Great Britain. The following passage occurred in it: "Light, or rather the absence of it, can hardly be said to determine, in any important degree, the distribution and limitation of the lower forms of animal life. Light is not essential even in the case of some of the higher orders. A large class of creatures, both terrestial and marine, possess no true organs of visions, although there is good reason for believing th they do possess some special sensory apparatus, susceptible to the influence of light; whilst certain creatures, whose habitation is in subterranean caves or lakes, as in the Magdalena caves, near Adelsburg, and the Great Mammoth caves in Kentucky, either porsess no organs of vision, or posssss them in so rudimentary a state, as to prove clearly that the absence or imperfect development of the sense may be compensated for by the higher development of other senses. It is impossible at present to say to what depth light penetrates in the sea. The photographic art will, no doubt, one day solve the problem. But it is almost certain that a limit is attained, and that, moreover, long before the deep recesses guaged by the sounding machines are reached, where the light giving portion of the ray cannot penetrate even in its most attenuated condition; and yet, as shall hereafter be shown, creatures have been found down in those profound and dark abysses whose coloring is as delicate and varied as if they had passed their existence under the bright influence of a summer sun."

A Microscopic Age.—If I were to point out what is the most striking characteristic of the present century, I do not think that I should dwell upon it as a scientific age, or as a commercial age, or as a mechanical age, or as literary age, or as a missionary age, (by all which epithets it has been described,) but as a microscopic age. Nothing appears to be so wonderful as the change which has occurred in the common doctrine of magnitudes. Little things have become great, and great things have become small. As the modern science of chemistry could not spring into existence until an accurate balance was invented, so the modern science of physiology and the whole theory of mortal life, as we now comprehend it, has grown out of the microscope. This is a literal fact, and it is symbolic of a much wider one,—that all modern research has become microscopic. Painting has become microscopic, and gives us details of mosses and lichens, which half a century ago would be laughed at as a useless waste of time. History has become microscopic, and enlivens the descriptions of courts and senates with a minute account of carpets and cakes, dresses, dinners, and other trivialities. Poetry has become microscopic, dwells even to morbidness on the blue fly singing i' th' pane, and tells us that the meanest flower that breathes can give to the bard thoughts that do lie too deep for tears.—*St. James's Magazine.*

A Woman of Good Taste.—The following very happy and equally true sketch is from the *London Quarterly Review.* "You see this lady turning a cold eye to the assurances of shopmen and the recommendation of milliners. She cares not how original a pattern may be, if it be ugly, or how recent a shape, if it be awkward. Whatever laws fashion dictates, she follows a law of her own, and is never behind it. She wears very beautiful things, which people generally suppose to be fetched from Paris, or, at least, made by a French Milliner, but which are often bought at the nearest town, and made by her own maid. Not that her costume is either rich or new; on the contrary; she wears many a cheap dress, but it is always pretty, and many an old one, but it is always good. She deals in no gaudy confusion of colors, nor does she affect a studied sobriety; but she either refreshes you with a spirited contrast, or composes you with a judicious harmony. Not a scrap of tinsel or trumpery appears upon her. She puts no faith in velvet bands, or gilt buttons, or twisted cording. She is quite aware however, that the garnish is as important as the dress; all her inner borders and beadings are delicate and fresh; and should anything peep out which is not intended to be seen, it is quite as much so as that which is. After all, there is no great art either in her fashions or her materials. The secret simply consists in her knowing the three grand unities of dress—her own station, her own age, and her own points. And no woman can dress well who does not. After this we need not say that whoever is attracted by the costume will not be disappointed in the wearer. She may not be handsome nor accomplished, but we will answer for her being even tempered, well informed, thoroughly sensible, and a complete lady."

Artificial Manure from Newfoundland.—Manure, which may now be considered as an article of Newfoundland trade, is manufactured on Massacre Island, at St. Pierre's, in the following manner:—Old herring bait, at a cost of

wo francs per barrel, is salted with foreign salt, then boiled in a furnace, containing 250 gallons, for three hours; when cold, put into thick, round mats, made for the purpose, about two feet in diameter, then placed under a screw, about twelve of them at a time, for twenty hours, by which process the water and oil are pressed out; these run by means of a shallow trough and conducting spouts to casks outside the building, after which the oil floats, and is taken off, yielding about five per cent; the mats containing the herrings are put out, after pressing, to dry for two days; it is then taken from the mats, put into flour barrels, and closely packed, by treading upon it; some is put into boxes containing 224 lbs. each; the barrel contains about the same weight. Caplin are made into manure as above, but do not produce oil. Cods' heads, also, in the same manner. Cods' heads are also well dried on a beach, for five days or a week, without any salt. They are then packed into flour barrels, screwed in and sent to France, where they are ground up for manure. All these manures are said to do better than guano, and fifty per cent. higher in price. Mussels, oysters, bones, kelp—I saw specimens of all these manures, ground to a powder, said to be equally as good as any other kinds.—*Chemical News.*

The *Linnæa Borealis*, a beautiful creeping plant, named by the naturalist Linnæus after himself, and adopted as part of the great botanist's crest, is very plentiful in the woods in the neighbourhood of Riviere du Loup and Cacouna. It is used by the young lady visitors to these places, in the summer manths, to twine round their hats, to which it makes a pretty ornament. It bears a small white bell-shaped flower, tinted with pink on the inside, and very fragrant, on a thin short stem, and is most abundant under the shelter of evergreens in half-cleared woods.—Thompson, the author of "Life in Russia," remarking on the love shown to this little flower by the Swedes, says:—"To have produced one man whose reputation has become the property of the universe is their boast and pride to this day, and, as if to prove what the force of example of one great mind can effect, the love of botany is among the Swedes a ruling passion. The *Linnæa borealis*, a little creeping plant of delicious fragrance, growing wild in the woods, and first discovered by Linnæus, and with which they crowned his bust, is perfectly venerated. In one of my rambles in the country some school boys, who were following the same path, came running to me, stranger as I was, exclaiming, 'see sir, we have found some of the *Linnæa borealis!*'" It will not detract from the admiration which the Canadian ladies show for this pretty creeper to learn its name and association, and how it is honoured in another country. —*Advertiser.*

Flax—Land intended for flax demands particular attention now. The land should have been deeply ploughed last autumn, and should, as soon as sufficiently dry, be well harrowed, rolled, grubbed, and well cleaned of all root weeds, such as scutch, crowfoot, &c. The best soil for flax is a deep, strong loam; and rich stubble land, after wheat, oats, or barley, produces the best sample, particularly if the grain crops have succeeded lea; the seed may be sown by the end of the month, and well harrowed with a short tined harrow, first one way, and then across, or diagonally, so as to distribute the seeds equally; finish with the roller. The proportion of seed generally sown to the Irish acre is three and a half to four bushels; but it is much safer to show too thick than to thin. Good crops are taken after potatoes, mangels, carrots, and parsnips; but of late there is a decided opinion setting in the north of Ireland against growing flax after turnips. Professor Hodges, of the Queen's College, Belfast, recommended the following special manure for the flax crop for the last three years; but we have as yet no reports as to its efficacy from those who may have tried it. It is said that recent chemical investigations show that the flax crop has taken from the soil those matters which the professor proposes to supply. The quantities are for a statute acre:—

		s.	d.
Muriate of potash, 30lb.....	cost	2	6
Chloride of sodium (common salt)28lb	"	0	3
Burned gypsum, powdered, 34lb.	"	0	6
Bone dust, 54lb.....	"	3	3
Sulphate of Magnesia (Epsom sals)56lb	"	4	0
		10	6

This is also recommended to be applied to the land when flax is sown after turnips, from the results of an expiment made by Mr. James Dickson is growing flax after carrots, potatoes, and turnips

Editorial Notices, &c.

Veterinary Science.—We have much pleasure in calling the attention of our readers to an advertisement in this number, of Mr. Andrew Smith, who has commenced his profession as a Veterinary Surgeon, in this city. We stated in our last that Mr. Smith had arrived, and that he brings with him unquestionable testimonials of high professional talent and moral character. Persons at a distance, having valuable stock requiring professional aid, may communicate with Mr. Smith by letter; and he will hold himself in readiness, in cases of urgent necessity, to pay, if required, a personal visit. With regard to the giving of Veterinary Instruction, contemplated by the Board of Agriculture in their arrangements with Mr. Smith, full particulars will be announced in this journal, as soon as they are finally decided.

We regret that owing to the unavoidable absence of the editors, at the time of our last number going to press, a considerable number of typographical errors escaped correction. As however, the meaning in most cases was sufficiently obvious, we do not think it necessary to append a list of the Errata.

AYRSHIRE BULL FOR SALE.

MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,
Dover Court.

Toronto, Aug., 1861.

TO LANDED PROPRIETORS

AN experienced English Agriculturist, for several years practically acquainted with the Canadian Farming, wishes to undertake the management of a Farm, either on shares, or as Bailiff to the owner.

Satisfactory references and testimonials given by addressing AGRICULTURIST, *Post Office Paris, C. W.*

Paris, C. W. June, 1861 3t.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the GovernmentHouse. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Toronto, 1861. *Secretary.*

VETERINARY SURGEON.

ANDREW SMITH, LICENTIATE of the Edinburgh Veterinary College, and, by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces, that he has commenced his profession in Toronto, and for the present, may be consulted either personally or by letter, on diseases of Horses, Cattle, &c., at the office of the Board of Agriculture, corner of King and Simcoe Streets; or at Mr. Bond's Livery Stables Shepherd Street.

Toronto, Octoner 3, 1861.

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The Agriculturist,

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THE

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OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, OCTOBER 16, 1861. No. 20.

The Forming of Composts.

Much that is practicable yet remains to be done by Canadian farmers, in compounding and economising manure. Various are the substances, more or less at hand, which, when properly applied, yield to plants their necessary nourishment, and which are essential indeed to their healthy growth and maturity. Farm-yard dung comprises in general all that our cultivated crops require, and consequently is the farmer's sheet anchor. But this manure varies considerably in its composition and nutritious power, according to the manner in which animals are fed and looked after; and experience has long since taught the agriculturists of Europe that it may often be more economically employed as a manure in connection with other substances,—such as gypsum, woollen rags, guano, peat, or other earthy matters. Composts of vegetable and calcareous substances will contribute largely to augment the quantity of manure produced on a farm. These composts can be formed of all animal or vegetable materials which readily decompose by fermentation, which the presence of lime accelerates.

The leaves of deciduous trees possess a highly fertilizing power, and in most places in this country can be readily procured by collecting and adding them to the manure heap, there to be mixed up with dung and earth, or they may be directly carted to the yards and stalls of cattle, and used for bedding or litter. Ferns are also beneficially employed for this purpose, when they can be readily obtained in sufficient quantity, though they do not contain equal amounts of fertilizing elements as the leaves of trees. All vegetable and animal matter, is valuable when saturated with the liquid of the manure heap and fermented. Peaty deposits or the earthy matter of swamps can be made available as manure, when the antiseptic properties are neutralized by the action of lime. Peaty deposits are usually present in the vicinity of argillaceous soils, and when applied to adhesive clays their porosity is increased, and consequently their fertility augmented. Peat, or black muck, such as is found more or less in swampy ground, is a substance, when dried, very suitable to form composts for such soils. The proportion of farm-yard manure and lime necessary to produce fermentation in peaty substances depends upon the character of the three materials. Seven parts of peat, two parts of farm-yard manure, and one of lime, will generally prove a good manure. To this should be added common salt, at the rate of 4 cwt. to the acre of the land to which the compost is to be applied. The compost heap should be turned once at least previous to being applied to the land. As a manure for the cultivation of turnips, mangels, and potatoes, this compost is very suitable. Peaty substances may also be advantageously used to absorb the liquid which drains from stables or manureheaps, and for increasing its amount; but it is more advisable to form a compost with farm-yard manure and lime.

The usual and most practicable way of form-

ing composts is by collecting weeds, the clearing of ditches, road-scrapings the high headlands of fields, and in short the refuse of all kinds of vegetable and animal matters. The proportion of farm-yard manure and lime to these various substances, should be regulated mainly by the character of the latter. It is necessary to induce decomposition, so as to reduce the decaying vegetable matter, and render the mineral constituents ready for absorption by the spongioles of the cultivated plants. The adding of common salt is generally advisable, the quantity regulated by the kind of crop to be grown. When the crop is to be potatoes, the quantity of salt should be limited, or it may be dispensed with altogether; for mangolds it should not exceed five or six cwt. to the acre.

Where other calcareous substances than lime can be obtained at cheap rates, these can be advantageously used in forming composts The quantities necessary are, however, much greater to induce that decomposition in the inert vegetable and mineral matters contained in the vegetable and earthy substances. Lime rubbish and shell-sand, gas lime, &c., are all suitable for forming composts. It is of considerable importance, in making large compost heaps, to select a place in or near to the field to which the manure is to be applied; as the expense of carting these heavy and bulky substances great distances may render the application unprofitable. Economy of labour should be a ruling consideration in the forming and application of compost heaps, as in all other farm operations.

In carting the materials to form the compost it is common to spread alternate layers of them, to the depth of four, six, or eight inches, and afterwards to turn the heap by the spade. Sometimes a plough is used to mix the lime and earth, when the compost is formed of a high headland, the spade being afterwards employed to throw the heap into a more rounded form. Whatever method is adopted, it is important, while studying economy of labour, to thoroughly mix the substances together by several turnings of the heap, and so to form the heap as to render it as little liable to absorb rain water as possible. With this precaution compost heaps in this climate, do not require, as they do in wetter countries, covering over with turf, litter, or other material. The horticulturist bestows great attention in forming composts,—these proving to him the most important fertilizers. In this country the farmer too much neglects this important means of restoring fertility to overcropped and exhausted soils, which with deeper and cleaner cultivation would, in most cases make a grateful and profitable return. The economising and mixing of manures in connection with a more thorough system of cultivation, (including draining where necessary) must always form the basis of every successful system of husbandry.

Oats given to Horses before or after Drinking.

It is well known, but not so generally practised as it ought to be, that oats or other grain given to horses are more readily digested, and consequently more nutritious, when supplied in a bruised or reduced state; and we have now improved a very convenient machine for effecting this very desirable purpose. The health and durability of the Horse greatly depend on the mode of feeding and treatment during his hours of rest, as well as on the quality of his food, and the amount of labour which he is required to perform. The following abridged observations of a practical French writer in the *Journal d' Agriculture Pratique*, are deserving the attention of all who have horses under their care.

The same quantity of oats given to a horse produces different effects according to the time they are administered. I have made the experiments on my own horses, and have always observed there is in the dung a quantity of oats not digested, when I purposely gave them water immediately after a feed of oats. There is decidedly, then, a great advantage in giving horses water before grain is fed to them. There is another bad practice, I observe, that of giving grain and hay on their return to the stable immediately after hard work. Being very hungry, they devour much food eagerly, and do not properly masticate it; the consequence is that it is not so well digested and not nearly so nutritious. When a horse returns from work, perspiring and out of breath, it should be allowed to rest for a time, then given a little hay; half

an hour afterwards, water, and then oats, or other grain. By this plan water may be given without risk of cold, as the oats act as a stimulant.

The Provincial Exhibition.

From the Journal of the Board of Arts and Manufactures for U. C.

The history of the Provincial Association in its relation to our Annual Provincial Exhibition is full of interest to Canadians. It is the narrative of the rise and progress of a national institution from which immense benefits have sprung, and many more are expected for a long series of years to come.

The Provincial Exhibition is one of the tests of our improvement in all that relates to material wealth and solid progress. It is an examination of the state of our industry, intelligence, activity and knowledge. It enables us to compare our condition as a people with that of other nations; to discover in what respect we fail to attain to the standard of excellence at which others have arrived; in what particulars we excel, and how we may best improve the natural advantages by which we are surrounded, and ameliorate the disadvantages which are inseparable from our geographical position.

No event of equal importance to the Provincial Exhibition occurs during the year in Canada, out of the field of politics; for good government stands at the head of all national interests, and the desire to be governed wisely and well is superior to all aspirations towards excellence in agriculture, art or mechanical skill.

Politics cannot be broached within the walls devoted to the objects of the Provincial Exhibition. All allusions in the annual addresses to subjects of a party or political nature are necessarily forbidden by tacit consent. Early in the history of the Provincial Association was the caution given by the Hon. Adam Fergusson, on the 22nd October, 1846, at Toronto, where the first Exhibition was held:—"I feel, gentlemen, far more intensely than I can possibly express, *that our very existence*, as a useful institution, must altogether depend upon a firm and scrupulous exclusion of all such topics from the Board. Thank God, we have a great and magnificent arena, upon which every man in Canada may contend, in honorable and patriotic competition, untainted by party jealousies or strife; and most devoutly should we all pray, that party feeling or party intrigue, may never be known amongst us."

The first Provincial Exhibition was held in Toronto, in October, 1846. It extended over two days. The whole amount offered in prizes reached nearly £400, and the number of entries was 1,150. Ten years later, the amount of prizes was £2,309, and the number of entries 3,791, or more than three times as many. It is curious and instructive to compare the thoughts and opinions of men at that period, based on what they saw around them, with the condition of things at the present day. The Hon. Chief Justice Robinson, now in the progress of events in Canada, where merit paves the way, Sir John Beverly Robinson, Bart., said at the first Exhibition, "There was no country possessing the advantages—advantages almost illimitable—that Canada does. Looking to the great waters at her feet, and the innumerable rivers leading thereto, and the water power afforded, he would ask, where was the country that could boast of like advantages with Upper Canada? Even with London and other towns far removed, the inhabitants had the advantages of good plank roads, by which the produce reached the great waters, on whose surface it was to be borne to Europe."

The Association began its existence boldly—it relied upon the country it was to serve. It has served it well, and well has it been sustained. It commenced its career wholly without funds, relying upon members' fees and on "contributions," particularly from County Societies, to enable it to pay the premiums offered by itself, and the expenses incurred in its own nourishment and growth.

In the second year of its existence, the annual Exhibition was held at Hamilton, when not less than 550 more entries were made than in the previous year, and premiums to the amount of £750 offered; but the Association found itself £300 in debt at the close of the year, but still full of hope. Col. E. W, Thomson, the President of the Association, a household name among farmers in Upper Canada, spoke in the annual address of the near completion of the internal water communications in the Province; but, he continued, "railroads, plank and macadamized roads must follow in every direction." He saw the necessity of progress—manufactures accompanying progress in agriculture—for he warned farmers of "the necessity of cultivating flax and hemp and the finer kinds of wool." Lord Elgin, with eloquence so natural to him, said of our country at that meeting: "Canada springs at once from the cradle into the full possession of the privileges of manhood. Canada with youth's elasticity in her tread, has the advantage of all the experience of age. She may avail herself, not only of the capital accumulated in older countries, but also of those treasures of knowledge, which have been gathered up, by the labor and research of earnest and thoughtful men, throughout a series of generations."

When three years old, the Association determined to hold their Exhibitions at Cobourg, and notwithstanding their indebtedness, they offered prizes to the amout of £775, and extended the time the exhibition was to last to four days. In

a pecuniary point of view this Exhibition was successful, and the number of persons who visited the grounds was about 6,000.

Great improvement began to be visible at the fourth Exhibition, which was held at Kingston in September, 1849. Evidence of improvement in home manufactures began to be apparent. Agricultural implements were no longer only represented from Rochester and elsewhere across the boundary line. Although our neighbors held their own, and indeed surpassed Canadian manufacturers, yet still there was great improvement visible, and it was evident to all that the annual Exhibitions were taking hold on the people and producing good results. The tree had only begun to blossom, but the show of fruit was good and promised well.

Mr. Sheriff Ruttan, who is one of the oldest born of this country, and who has seen it rise rom a wilderness wherein people starved if the wolves killed too many deer, to a wealthy Province, exporting its sixteen million bushels of wheat, and numbering over a million and a quarter industrious inhabitants. said in his address, which he delivered in 1849, "We must *henceforth* encourage all sorts of manufactories throughout the country, and until we can be thence supplied, set a-going within our own dwellings the old-fashioned spinning wheel and loom. We must, male and female, wear our own manufactures."

The year 1850 ought to have been expressly distinguished by progress—it was the year before the great International Exhibition at London. The Provincial Exhibition was held at Niagara. The prizes offered amounted in value to £1,276, and the results were particularly satisfactory. This year will be celebrated in the agricultural annals of the country by the establishment of the Board of Agriculture, which became a corporate body by act of Parliament on the 10th August, 1850. In 1851 the Board was organized, and the names of the elected members published in the *Canada Gazette*. They were E. W. Thomson, Esq, Hon. Adam Fergusson, Henry Ruttan, Esq., R. L Denison, E q, David Christie, Esq., J. B. Marks, Esq, John Harland, Esq., the Hon. Inspector General, and the Professor of Agriculture in the University of Toronto.

Brockville was the next place where it had been decided to hold the Exhibition for the year 1851 J. B. Marks, Esq., the President, saw what many began to see dimly, others more clearly, but did not deem it wise to express their views openly, that "the powerful influence of manufactures in increasing the population and wealth of a country is too certain and obvious to admit of doubt. They not only afford direct subsistence, and the means of attaining to affluence, to an immense number of individuals, but they act powerfully and beneficially on the agricultural and other classes,—supplying them with an infinite variety of useful and necessary accommodations at a low price. A flourishing agriculture greatly depends, in fact, upon flourishing manufacture." The foregoing sentence told much in few words. What would be the use of the most successful agriculture if there was no market for surplus produce? and if foreign markets failed, as they frequently do, what would the farmer do with his grain and stock if all had to sell and there was nobody to buy? The results of this Exhibition were not very favorable. Brockville is not situated in a good farming county of great extent. The entries, as well as the amount of the prizes awarded, were less than those of the preceding year; but the finances, chiefly in consequence of the Government grant, which in 1852 was increased from £500 to £1,000, were prosperous.

The seventh Exhibition was held at Toronto, on the site of the present magnificent building—the Toronto University. Here is another instance of the changes, rapid and most unexpected, which constantly occur in Canada. Where the products of the farm and the manufactures of Canada were exhibited in an open field, ten years ago, is erected the most splendid building in British America and one of the finest on this continent. The writer of this notice had an opportunity of describing the Exhibition at Toronto, in 1852, in the pages of the *Canadian Journal*.* It will not be out of place here to introduce a few brief extracts, to show how the progress of Canada then was considered something extraordinary and marvellous. We may compareit with our impressions of to-day, written at London, nine years since the Exhibition to which the quotations refer :—

* The *Canadian Journal*, first series, October, 1852.

"But few, perhaps, among the thirty thousand visitors to the Exhibition ground on Thursday, September 23rd, permitted their thoughts to wander back to the time when the spot, so densely occupied by the 'pale faces,' and crowded with their works of patient industry and skilful art, was a wild and marshy forest, tenanted only by a few wandering Messassaugas; or, at a later date, and in memory of numbers then present, the forest suburbs of a village, which numbered but a few hundred enterprising settlers.

"Sixty years ago, an Indian wigwam stood alone on the spot now occupied by a city containing thirty-two thousand inhabitants, and furnished with nearly all the requirements of of modern civilization, and much of the energy and skill which characterizes the age.

"Sixty years ago, the population of Upper Canada consisted of a few thousand families, dispersed over a territory containing upwards of forty-six thousand square miles, e joying but a very limited means of communication between themselves, and deriving few advantages from a chequered intercourse with the world beyond their own great lakes.

"At the time we write this extensive Province is peopled with one million freemen, in possession of those civil and religious blessings which can alone be won and enjoyed by an enterprising and vigorous people."

The number of entries at this Exhibition was upwards of 3,000 ; the number of visitors computed at about 40,000, and the total expenditure amounting to £2,400.

In 1852 another charge, greatly affecting the interests of agriculture and the mechanical arts in the Province, took place. A new department was added to the Provincial Government, under the designation of the "Bureau of Agriculture."

The object of the new governmental department was "to centralize and perfect, by means of the appointment of a member of the Executive Government specially charged with such duties, the system or organization under which Agricultural Societies, the Provincial Agricultural Association, and Boards of Agriculture, had been for some time in existence ; to give these bodies, in both sections of the Province, a more direct means of communication with the government ; to increase the facilities for carrying out their objects, so as to produce more valuable results ; and to afford to the Legislature, and to the Province generally, a ready means of ascertaining what those results were." The Hon. Malcolm Cameron was the first incumbent of this new office, under the title of "Minister of Agriculture."

The eighth Provincial Exhibition was held in Hamilton. The whole amount of prizes offered was £1,602, being an increase of £130 on the previous year ; the number of entries was 2,820. This Exhibition was considered as an improvement on that held at Toronto. The general display of mechanical work and of domestic manufactures was very good, showing both progress and confidence in home productions. The number of visitors was about 30,000. In the annual address, the senior Vice-President, Mr. Treadwell, who in the absence of the President, Mr. Matthie, was called upon to perform that duty, said : "Our railways have been located, and are in progress of construction." Time and money have finished the work, and we are now reaping the benefits of those gigantic enterprises which at these earlier Exhbitions were only spoken of or slowly progressing.

In 1854 the Board of Agriculture presented a report to the Government, in which they expressed their opinion of the character of the Provincial Exhibitions, and the use they had been to the country in the following words :—

"The last two Exhibitions, held at Toronto and Hamilton, respectively, were attended by a vast concourse of visitors ; and not only were the stock and articles for competition much larger in amount than at previous shows, but several new things were introduced, and the general quality of the whole was of a higher character than heretofore. In implements and machinery a very marked improvement was obvious, and in the varied productions, adapted to a northern climate, it is believed that the Exhibitions of the Upper Canada Association are not excelled by any on this continent."

The year 1854 brought the ninth Exhibition to London. The site selected was the old Parade ground, about twenty-eight acres in extent. The influence of railways began now to be felt. The Great Western Railway Company offered to convey articles to and from the Exhibition free of charge. The influx of visitors was very great, and at one time it was stated that 25,000 person were present,—while the total number of visitors was thought to be not less than at Hamilton and Toronto. The amount offered in prizes was £1,794, and the number of entries 2,933. The pecuniary condition of the Association was rapidly becoming more flourishing, the balance in hand, on the 21st Sept., 1854, being £1,332 14s. 4½d.

The tenth Exhibition was held at Cobourg. The prize list for 1855 amounted to £2,304, or about £520 more than had been offered at any previous Exhibition. In agricultural implements and domestic manufactures it fell short of its predecessors ; but in the cattle department it was considered to be equal, if not superior, to any which had taken place on this continent. The President David Christie, Esq., M.PP., stated in the annual address that, "We think we can mark in each succeeding Exhibition unmistakable proof of the rapid progress which Canada is making in the social scale. But such evidence is not confined to our Provincial Exhibitions. At the Industrial Exhibitions of London, New York and Paris, those great milestones in the pathway of the world's progress, the word 'Canada' is broadly marked."

The eleventh Exhibition was held at Kingston in September, 1856. Here the first permanent building for the purposes of the Association was erected. The Government granted a license of occupation for the term of twenty years on a part of the Penitentiary farm lot, of about twenty acres in area. Here the Local Committee erected a building of wood and glass. This structure is of the form of a Greek cross, the transepts being 190 feet long and 56 broad. The height of the cupola is 60 feet, but the general height of the building not more than 34 feet. The grounds are enclosed with a permanent board fence. The entire expense of the building, offices, &c., amounted to £3,918. The number of entries at the Exhibition was upwards of 3,790. Agricultural implements, manufactures in metals, carriages, cabinet ware, woollen goods and manufactures generally were well represented, and the entries considerably exceeded those of any former Exhibition. The amount offered in premiums was

£2,309, but the amount awarded was only £1,699. This was owing, no doubt, to a large number of articles which were entered for Exhibition not having been sent in time.

The twelfth Exhibition was held at Brantford, on an area of about twenty acres, on which temporary buildings had been erected by the local committee. The amount of prizes was £2,517, and the number of entries reached 4,337. The agricultural implements were very well represented, being nearly double the number exhibited at either of the two previous Exhibitions. In manufactures of leather, furs, metals, &c., the entries were more numerous than in former years, but there was a falling off in woollen and flax goods.

The subject of having permanent buildings erected in suitable localities for the Exhibitions of the Associations was publicly discussed at a general meeting of members of the Association. At a banquet given to Sir William Eyre, the Administrator of the Government, and other distinguished guests, the Hon. P. M. Vankoughnet, Minister of Agriculture, very appropriately remarked that "the mechanical department of the Exhibition has justly attracted great consideration, and an exhibition of those articles is more interesting to many than the mere productions of the earth." "The importance of our agricultural interests could be no better exemplified than by the mixed display here shown, which proves just this, that from what was the first product of the laborer's toil have been built up those arts and manufactures, specimens of which are here exhibited." The Rev. Dr. McCaul thus described the condition of Canada in 1857: "A few years ago, the Chief Justice of Upper Canada stated that there were men now living—and it is possible that they may be still alive—who could remember the time when there was not a single cultivated farm within the limits of the Western Province. And what have we now, within the duration of human life? Millions of acres under cultivation, well-managed, well-stocked farms, rewarding the industry, the enterprise, and skill devoted to them—millions of bushels of wheat exported—our agricultural products worth millions of pounds sterling—some thousands of mills and other manufacturing establishments—large and populous and thriving cities, towns and villages, where formerly there were but tangled woods and dreary swamps—commerce spreading the sail or driving the paddle-wheel alike over the watery highway, that stretches from the far-off gulf of ocean to remote Superior, and over the smaller lakes that gem the interior of the country—and the whistle of the locomotive, heard above the hum of business, as it sweeps through our frontier towns, from the rocky fortress of the St. Lawrence to the grassy banks of the Detroit, or waking the echoes of the primæval forest, as it rushes far back beneath its leafy arches."

The Hon. George Alexander, M.L.C., the President of the Association, adverted in his address to the importance of fostering manufactures, giving due acknowledgment to the prior claim of agriculture:—

"But while Agriculture is and will continue to be our chief and leading interest, there are other objects which must enlist the enterprize of our people. The husbandman raises more than he can consume, while in this age of high civilization, he is the creature of a thousand wants. We must look to commerce and manufactures to supply those wants, and to give a marketable value to all our surplus produce. We must foster in every way those branches of industry which will give population to our towns and cities, secure to us a home market—*diminish the amount of our imports*, and consolidate our wealth. Canada has already been successful with her Foundries, Tanneries, Asheries, Soap, Chair, and Nail Factories, Cloth, Oil and Paper Mills.—Toronto, Hamilton, and Kingston, have produced their Locomotives, and Galt her highly finished edge tools; but she has done more, and it is with pride we chronicle the fact that Galt has exported to Australia during the present season, a steam engine and other manufactures.* There is a marked spirit of enterprise abroad in our country, and when we look at our noble St. Lawrence and those great inland seas, which along with our railways afford such facilities for carrying on all commercial exchanges—when we regard the boundless extent of water power—the certain local demand for all manufactured products—while we have territory that can sustain a dense and teeming population—I say that we cannot behold all this without feeling that our country presents an unlimited field for human enterprise."

The financial position of the Society still continued favorable; the amount received and paid by the Treasurer, R. L. Denison, Esq., reaching the very imposing sum of £13,799 16s. 6d., and the balance at the credit of the Association slightly exceeded £460.

In 1858 the thirteenth Exhibition was held in Toronto. An imposing permanent building was erected on a portion of the military reserve, ceded to the corporation by the Government, comprising an area of about twenty acres. The local contribntions towards the building were $20,000 from the City of Toronto, $4,000 from the County of York, and $800 from Agricultural Societies. The amount of prizes offered was about $11,000, and the number of entries reached 5,559, being over 1,200 more than at any previous Exhibition. The following description of the building was given in the local papers, at the time of laying the foundation stone :—

* Messrs. James Crombie & Co., exported a 20 horse-power high pressure engine. Messrs. Wm. Quarry & Co., exported manufactured harness.

"The building is situated upon 20 acres of ground suitably enclosed, and will afford exhibition space of 32,000 feet. It is to be built in the style of the English exhibition of 1851. It will extend 256 feet in length, 144 in breadth, and will be 56 feet in height, the wings being so formed as to admit of subsequent extension if necessary. 2,000 square feet of glass will be fixed upon the roof, and fully 6,000 feet below. The glass will be of the rough-rolled plate description, manufactured expressly in England, being for the sides one-eight of an inch in thickness, and for the roof one-sixteenth of an inch thicker. The gross weight of the glass will be 12 tons. It is worthy of mention that the roof has been adapted to our climate. There are no gutters, as gutters if broken when frozen would have a tendency to burst the framework, and in a year or two destroy the building. The circular portion of the roof will be covered with tin. The castings were all made by the Messrs. Hamilton & Sons, at the St. Lawrence Foundry, in this city. The contractors' cost of the building will amount to £4,878. To assure perfect safety the girders have been tested to a strain of double the pressure to which they can by any possibility be subjected, and are calculated to bear five times the ordinary strain of pressure."

At the ceremony of laying the foundation-stone, Col. Thomson, President of the Board of Agriculture, said: "As to the objects of the Exhibition, they were intended not only to advance the interests of agriculture, but also to encourage arts and manufactures. The Society was anxious that arts and manufactures should advance equally with agriculture."

The thirteenth Exhibition was inaugurated with unusual ceremonies. The Metropolitan Choral Society, composed of 250 vocal and instrumental performers, officiated with great success. Prayers were offered up by the Lord Bishop of Toronto; and an address was presented to His Excellency Sir Edmund W. Head, Bart., Governor General.

The Rev. John McCaul, LL.D., President of University College, delivered an excellent address in the Exhibition building, which by the way, has very erroneously been called "The Crystal Palace," on "The state of Agriculture amongst the Romans."

The President of the Association, D. B. Stevenson, Esq., was unfortunately unable to assume the duties of his office on account of continued ill health. His place was supplied by W. Ferguson, Esq., the first Vice-President, who dwelt upon the manufacturing interests of the Province to a greater length than any of his predecessors. The subjoined extracts will explain the views entertained by that gentleman, and we should be glad to see other members of the Board of Agriculture more thoroughly imbued with the spirit they embody:—

"It may be alleged that this country is not sufficiently advanced, to require or maintain manufacturing on an extensive scale; and that the reclaiming of our forests, and a better cultivation of our cleared lands, should for many years be our chief object. This course might be found to answer, if the whole immigration to this country consisted of farming people; but as it does not, and as a very large number of those annually arriving at our ports, consist of artizans in the various mechanical branches, from the principal manufacturing towns, and places in the old world, why should the suicidal course be persisted in, of encouraging or necessitating them to take to farming as the mode of earning their future living, or in the event of their not doing so; oblige them for the want of employment in their own line of business, to seek it in the neighboring republic, where with their skill and industry they contribute to build up the manufactures of foreign competitors at the expense of our own, and at the same time essentially advance the farming interests of that country by increasing the home consumption of the products of the farm.

"Thousands of the most skilful artizans and workmen from the Old World, are year after year following their friends,and seeking homes on this side of the Atlantic; and for want of suitable employment for them under our national flag, they as regulary leave our shores for the United States, where, with the wealth of their skill and labor, they enrich that country and make happy homes for themselves.

"As a proof of what Canada has done with the little encouragement which the Legislature has afforded her manufactures, we have but to examine within the limits of this Exhibition ground and we perceive an excellence displayed in almost every department of Arts and Manufactures, in many instances not excelled by the older countries in Europe and America.

"And to what eminence our manufactures might arrive if properly encouraged, seeing the extensiveness of our forests, and the richness and profusion of our mineral productions, not even the most sanguine can predict. Notwithstanding the discouraging circumstances under which some of our infant manufactures are laboring against foreign importations, yet many are still successfully working, not only against want of proper protection, but also against the absence of that patronage to which home manufactures have so just a claim."

It is almost needless to say that this Exhibition was most successful, and illustrated in a very complete and satisfactory manner the remarkable progress made in the country in agriculture, manufactures and art.

(To be continued.)

The Wheat Crop.

Wheat is essentially the bread-corn of the northern temperate zone, and claims the first place in our consideration of the "farm crops" of our own country. This place, indeed, has been assigned to it since the earliest records of our agriculture; for although, in earlier times peas, beans, barley, oats, and rye entered more largely than at present into the ordinary food of the people, experience generally, but surely, showed that no other grain assimilated so well with the human constitution, and so well represented the two great classes of constituents necessary to sustain the tear and wear of human life. Thus, keeping pace with the increasing civilization and knowledge of the people, wheat has won its way to the head of our market lists, where it now stands, acting as a great social barometer, whose variations are watched with eager anxiety by the peer as well as the peasant.

A few words will suffice to show how wheat fulfils the conditions necessary for human nutrition better than any other of our cultivated grains. The valuable researches in physiological chemistry by Liebig, Mulder, and others, so ably followed up by some of our own chemists, have demonstrated clearly that to sustain the functions of animal life two classes of food constituents are required—the one to support the necessary temperature of the body, through the agency of the respiratory system; the other to furnish materials for building up of the material parts of the body, such as the bones, flesh, skin, &c. Thus, "food fuel" is being constantly required for the one, and "food materials" for the other. The regularity of this requirement constitutes health—and continued departure from it, disease.

It is generaliy conceded that, under ordinary conditions, these constituents are required in certain proportions; consequently, any substance containing these classes of constituents in the required proportions would by itself sustain human life for a longer period than other substances in which the relative proportions were not so suitable. These constituents we are accustomed to classify under the heads of—1, Non-nitrogenous, or heat-giving and fat-forming compounds; and 2, Nitrogenous, or flesh-forming and plastic compounds; and from experience, both scientific and practical, we have been led to look upon the proportion of six of the former to one of the latter as that which will, under ordinary conditions, most satisfactorily meet the requirements of the human frame in the northern temperate zone. Now, wheat happily possesses the two classes of constituents in these desirable proportions, and has, therefore been taken as the standard by which the nutritive value of all our other food grains has been gauged.

In barley, oats, and rye, the relative proportions, though they vary but little, are not so suitable. If they are used exclusively as substitutes for wheat they generally derange the bodily health of the consumer, and we only find them forming the food of the people under circumstances where wheat cannot be procured. Beans and peas show a large excess of the nitrogenous or flesh-forming compounds; while in Indian corn and rice of the hotter and tropical climates, the non-nitrogenous constituents form a large proportion of their whole substance. These latter food grains, therefore, would require to be usually accompanied by some additional substances to secure the necessary balance between their nutritive constituents, before they could form any basis of the diet equivalent to that represented by wheat. Wheat seems to have been given specially to man as the fittest source of supply of his daily food, the subordinate animals, companions of his daily toil, and necessary for his existence, contenting themselves, nay, preferring either of the other grains—barley, oats, or beans—when left to their own selection.

The wheat plant appears to have been known and valued from the earliest periods. In the Bible we have frequent mention of it as being known by the Jews and Egyptians; therefore, we may fairly assign to it an eastern origin. Its range, however, is greater than that of most of our other food plants—its cultivation extending from within the tropics to well-nigh the limits of the temperate zone of the northern hemisphere.

This wide range of climate, which enables the inhabitants of many different countries to enjoy the advantages of its cultivation, is occasioned by the numerous species and varieties of which the genus wheat is composed, some being suitable for the clime of India, others for that of northern Europe, while all seem to thrive well in the zones of intermediate temperature. If we look for the principal wheat-producing countries in Europe, we shall find them to be England, France, Germany, Northern Spain and Italy, Prussia, Hungary, Southern Russia, Poland, and the countries bordering the Black Sea. In Asia, the countries lying between the Black Sea on the north and the Persian Gulf and the Red Sea on the south, comprising those regions mentioned in our Bible records, represent the area where wheat is most commonly cultivated. Egypt, Algeria, and the countries running down to the shores of the Mediterranean, are the principal wheat districts of Africa; while the present produce of Canada and the United States has already shown us the well-nigh illimitable area of wheat-producing soils which America possesses, and which will be gradually brought into cultivation as its surface becomes occupied, and its population increases. In Australia and New Zealand the soil and the climate are both admirably adapted to the growth of wheat. The beautiful samples of Australian wheat sent to the great exhibition in 1851, and the Paris ex-

hibition in 1855, told their own tale as to quality of produce.

The botanist tells us that the genus of plants yielding the various kinds of wheat is called TRITICUM, and that it belongs to the natural order GRAMINEÆ (grasses) of which it is the most prominent and important member.

The name *triticum* is, according to Varro, a Roman agricultural writer, derived from "*tritum*," ground or rubbed, because the fruit or seed in its preparation as a food for man requires the process of grinding or trituration. We learn, too, from Varro and other authors of that period, the place which wheat occupied in the agriculture of the Romans, and the great pains and consideration they bestowed upon its cultivation. Indeed many of their rules and recommendations form good comments upon the negligent tillage of our own times, and might be consulted and followed with advantage by most of us at the present day. The Romans appear to have been acquainted with two species of wheat, the *triticum* or ordinary wheat, and the *far* or spelt wheat; the first they recommended to have sown on good, warm, loamy soils, while they consider the other best adapted for cold clay soils, and for high and exposed districts. Their rules for getting the land into proper condition preparatory to the wheat crop are well worthy of our attention. They insisted upon the necessity of having the land in good heart, so as to be able to produce and perfect a good plant; that it should be carefully freed from all noxious weeds, which abstract from the soil the food that should support the growing crop; that the soil should be broken down into the finest tilth possible, and that it should be ploughed as deep as the farmer's force would permit, so that roots of the plant might be able to penetrate the subsoil in search of its necessary food.

The Romans were evidently keen observers of *results*, though they were not so well acquainted with their *causes* as we are. Their farmers had not the advantages which chemistry places in the hands of ours; and yet many of their practices and precepts are even now entirely neglected by the majority of us, and only to be seen exemplified on the farms of our most enlightened and intelligent agriculturists. On heavy lands they recommended fallowing, and exposure to the sun and to the frosts; on good loams soils they recommended that wheat should follow a crop that differed from it in its habit of growing and its requirements from the soil; and on light sandy or gravelly soils, that the soil should have the necessary firmness given to it by means of the roller or other implement. They were more particlar, too, in keeping the seed pure and unmixed, in selecting the best for the purpose of sowing, and in changing their seed and adapting it to the soil in which it was to be used. These are all points which we shall have to refer to as we discuss the subject of this treatise, and which never can be neglected with impunity in the cultivation of wheat.

In describing the different species composing the genus triticum, well-nigh every writer has adopted a different arrangement, and consequently considerable confusion and misapprehension exist, not only as to the species, but as to the correct nomenclature of the endless (so-called) varieties, which enter into our ordinary cultivation. By common consent, M. Louis Vilmorin, in France, and Mr. Lawson, in this country, are looked upon as the best authorities on the subject. Therefore, we cannot do better than to follow the division and classification of the genus, so ably drawn up by the former, while the descriptions and agricultural characteristics of the cultivated varieties, by Mr. Lawson, will enable us to form correct opinions of their nature and suitability to our several requirements.

M. Vilmorin divides the genus "wheat" under seven heads or "species:"—

1. TRITICUM SATIVUM—Common Wheat.
2. TRITICUM TURGIDUM—Turgid Wheat.
3. TRITICUM DURUM—Hard Wheat.
4. TRITICUM POLONICUM—Polish Wheat.
5. TRITICUM AMYLEUM—Starch Wheat.
6. TRITICUM MONOCOCUM—One-grain Wheat.
7. TRITICUM SPELTA—Spelt.

The first four species have their seed or grain naked, while the seed of the remaining species has the chaff scales adhering to it.

No. 1, *T. sativum*, is arranged in two principal divisions, "bearded" and smooth, or "beardless." Of the bearded there appear to be seven, and of the smooth or beardless twenty seven distinct varieties; and these are again divided into sub-variteies according to their colour, as white, yellow, or red, and according also as the chaff-scales are smooth or rough.

No. 2, *T. turgidum* has two principal divisions—those varieties having simple ears, and those having compound—the sub-varieties being determined by the colour, white, red, or dark, and by the rough or smooth character of the chaff-scales. of these M. Vilmorin enumerates eleven distinct varieties, ten having simple ears, and one having a compound ear.

No. 3, *T. durum*, has three verieties.

No. 4, *T. polonicum*, only one.

No. 5, *T. amyleum*, only one.

No. 6, *T. monoccum*, only one.

No. 7. *T. spelta*, is divided into two—the bearded and beardless varieties.

Of these seven species only the two first are cultivated in this country, the others being merely grown for experimental or illustrative purposes.

The *T. sativum* comprises all the varieties of winter and spring wheat under ordinary cultivation; the *T. turgidum* being limited to certain districts where the soils are cold and strong, and where a large yield of a coarse quality is desired.

It would not be within the limits of this short treatise to attempt to give a decription of each, or of half the various wheats cultivated in different parts of the kingdom; it must, therefore,

be confined to those most generally esteemed varieties met within our best cultivated districts, their characteristics being given in the briefest possible manner. The simplest division between them for our purpose is that of colour, white or red, the yellow varieties being classified either with the one or the other, according to the darkness of their tint. Amongst the most esteemed of the white varieties, we meet with,

Brodie's Wheat.—Fine sample, superior to Hunter's; straw longer, about a week or ten days earlier at harvest, and more productive; suited for spring sowing, cultivation increasing in good districts—Lothians, Berwickshire, &c.

Chidham.—Fine quality; short, compact grain, with fine, transparent skin; meals well, and fetches a good price at market; largely grown in the southern countries; increasing in Scotland.

Dwarf Cluster.—Short, firm straw; tillers well; yield generally good both in quality and quantity; suitable for rich, humous (vegetable mould) soil; grown chiefly in the south, but stands the north climate very satisfactorily.

Essex.—Resembles Chidham; probably the same wheat slightly altered by cultivation in a different district; fine thin-skinned variety, with square head and no awns; esteemed highly by millers; yield good in good district.

Fenton.—Hardy, with short, strong straw: rarely falls; good cropper; suitable for rich soils; quality of grain good.

Hopetoun.—Resembles Hunter's, rather finer quality perhaps; hardy; good cropper; largely cultivated in the north; esteemed in the markets.

Hunter's.—Rather thick ear, tapering towards point; grain rather large, plump; top dull white or light brownish tint; quality excellent: hardy; grown extensively in the north; succeeds well in the south.

Pearl.—Resembles Chidham and Essex; fine quality of grain; straw long and stout; early at harvest, and suitable for either winter spring sowing, on rich, warm soils; meals well.

Spring.—Bearded; ear shortish; grain thin, with transparent skin; straw generally shortish and weak; ripens quickly even when sown late in spring.

Talavera—Ear long and thin; grain very large, plump, with rounded ends quality excellent; meals well, and always tops the market; tender habit; sown in spring, and requires good soils; has not succeeded in the north.

Uxbridge.—Apparently same as Chidham, improved by climate; ears larger; grain small, short and plump; fine white colour; sample beautiful, and much sought after by millers for finest flours; good cropper, succeeds well in good districts of the north.

Velvet-eared, or Rough Chaffed.—Straw short and stout; grain medium size, of pearly white colour; excellent quality, and good cropper; requires dry climate, or apt to mildew; largely grown in the eastern counties.

(To be continued.)

A Diet for Acute Diseases.

The necessity for supplying a certain quantity of nutriment to the system does not cease upon the occurrence of disease, although it may be considerably modified at least for a time. This circumstance renders it advisable to decide upon the precise object desired, before any system of dieting be arranged. The simple inquiry what is necessary, in reference to each case, would generally find an answer, and prevent a host of errors in the treatment of animals suffering under disease; applying this principle we come at once to the question, what is the object of diet in acute affections?

In very few, perhaps in no instances, can it be said that food is at all indispensable to support the system; under the immediate disturbance of an active disease, aliment of any kind will stimulate, and, consequently unless absolutely necessary had better not be administered at all. We can hardly understand that harm can result from a day's or night's abstinence, while we have often had reason to regret the consumption of too much, when the digestive organs were unable to perform their office. We have probably no more safe or direct sedative effect resulting from any system of treatment than from total abstinence for a time; no more direct source of irritation than the introduction of a quantity of material into the stomach which is incapable of appropriating it. The anxious inquiry, What will he eat?" applied to man or beast, is expressive of solicitude, which, however genuine, is unfortunate for the patient, as it commonly leads to the selection of tempting food, to excite an appetite which naturally would not existuntil the organism was again sufficiently reinstated to permit its indulgence with advantage. It may be accepted as an absolute fact, that under every form of acute disease no benefit can possibly result from allowing the patient to eat at the commencement, even should a desire to do so be manifest, there is no immediate want of sustenance, and no debility will result from a temporary abstinence; although even were these consequences imminent, food would not furnish the means of prevention, as the impaired digestive action reduces it to the level of mere waste material, unproductive of any benefit to the system.

Our anxiety is always to remove every particle of food from the animal's sight for the first twelve hours of an acute disease, allowing only water, rendered medicinal by the admixture of some saline, such as nitrate of potash or the sulphate of magnesia or soda; by this plan we prevent an irritating thirst, and at the same time the too large consumption of fluid, thus made distasteful; while the quantity which the animal's feelings prompt him to swallow will act beneficially upon the secretions.

At the end of ten or twelve hours, a little hay or green food, or mash, may be offered, as the

the excitement of unappeased hunger would be injurious; but if the patient still manifest an indifference, the material should be at once withdrawn; in this way n the absence of appetite, an animal may safely fast for a considerable time, according to circumstances, until, indeed, the acute state of the malady has slightly subsided, when the assimilative functions are partially restored, and food of a proper kind may be given with benefit.

The most succulent articles of diet are universally preferred for sick animals to dry food, even although the latter might be more nutritious. As the nutriment is not in so available a form, we gain nothing by selecting it, while the moist diet is more easily masticated, besides being much less stimulating. For these reasons carrots or green food are desirable: the last, in particular, is usually very harmless, and tends to secretation by the amount of water it contains, besides acting beneficially by means of its saline constituents. The amount of nutritious matter contained in such diet is exceedingly small, but quite equivalent to the present wants of the system.

In the absence of succulent food, mashes are the nearest representative, but as bran is irritating in some states of mucous membrane, its use is not at all times allowable; where any con trary indications are present, flour gruel, or linseed tea, or a mixture of the two, will generally be taken by the patient with readiness, and will afford sufficient support to the system, without causing any excitement of the membrane of stomach or intestines. It is hardly necessary to remark that succulent vegetables are not to be permitted in cases of diarrhœa, as their action is ordinarily laxative, in consequence, probably, of the quantity of water which they contain; nor, by the same rule, will carrots or turnips be legitimate diet during polyuria, as under any circumstances, a diuretic effect generally follows their use: the white carrot we have noticed to be particularly active in this respect.

Against the system of abstinence at the commencement of an acute malady, it may be urged that the disease and the necessary depletive treatment will sufficiently weaken the patient, and that supporting the body by nutritious food is the only method of compensation. It might be easily shown that the same objection would apply to any kind of depletive treatment. It is unfortunately true that we cannot attack acute disease successfully without, to a considerable extent, lessening the tone of the system. If it were the case that nutritious food would furnish a remedy for this untoward consequence, without adding anything to the present excitement, we should be justified in defending its use; but as the system owes its support to the matter assimilated, and not merely to the food swallowed, we can hardly expect much from the consumption of nutriment which the digestive system cannot appropriate; nor would it be consistent, even if itcould, to allow a liberal diet, while our other therapeutic measures have a direct opposite tendency. The stomach would probably suffer in many cases if allowed to remain empty for any long time, from the solvent and irritating effects of its own secretion; hence a bland diet, easy of digestion and not stimulating or highly nutritive, is advisable; and upon it the animal can well subsist until the organism is capable of assimilating its ordinary aliment. In some instances an extreme disgust at the sight of food compels the employment of force in its adminstration, a necessity which cannot but be deplored from the disturbance occasioned to an animal whose life almost depends upon perfect quietude; nevertheless for the reasons given, some diet is necessary, and the only thing to be done under the circumstances is to administer it as carefully as possible, always remembering that a small quantity of aliment taken voluntarily will be more advantageous to the animal than twice or thrice the amount forced into the stomach. Linseed tea and gruels of oat-meal, bean-meal, or flour, according to circumstances, may be easily administered by the ordinary drenching horn, two or three times a day. Any medicines which the case may require will, as a matter of course, be given at the same time.

When from any causes, such as tetanus, throat disease, or extreme irritability of stomach, it becomes impossible to exhibit food by the mouth, we have recourse to enemata; animal or vegetable food in fluid mixture may be injected into the rectum; small quantities only are permissible, and consequently their more frequent administration is necessary.—Professor Brown, of Cirencester, in *Veterinarian.*

Jethro Tull, the Introducer of the Lois-Weedon Culture System.

"Perhaps," says the *North British Agriculturist* (August 22, 1860) "the system, even to the width of the three rows and intervals between these rows, is exactly the same as the system pursued by Jethro Tull and others more than a century ago. The following are extracts from *Select Transactions of the Society of Improvers, Scotland,* published in Edinburgh in the year 1743:—

A letter concerning Mr. Tull's method of improvement, to a person of distinction in Scotland, and by him communicated to the Society.

I have been at the Lord Ducie's, where I have seen several new methods of husbandry, particularly with wheat. This way was found out by one Mr. Tull, a gentleman who was bred a scholar, turned his philosophy towards plants and husbandry, and by experience found that the constant expense of manure, which was ne-

cessary in the common way of husbandry, ate up so much of the profits, that it did not answer. This gentleman I did not see; but his son lives with this Lord, and from him I had the following directions:

If wheat land be out of order, by being foul, or run out, begin to fallow it at Christmas, and again in March. Be sure you plough the second time the same way as at first, because by that means you'll probably break some hard lumps that may have remained after the first ploughing. But the third time it may be cross ploughed, which will certainly mellow the ground. If you can plough it a fourth and a fifth time, it will do the ground more good than if you dunged it. And by this method he thinks his dung rather an encumbrance than of use for corn; because it brings up weeds, which take away the nourishment the corn should get. The earlier the wheat is sown the better. Wheat must be sown with a drill, which is a machine which holds the corn to be sown in a box. There are three holes, which open by a spring as the drill turns on an axletree, which lets the corn fall in three rows about a foot apart.

There is a little thing like a plough, no greater than a large pruning knife, which cuts the ground at a certain deepness before the hole that drops the corn; and a little harrow fixed to the machine, that closes the ground upon the corn after it is sown. This is the only harrowing it must get; because the common harrows bury a great deal of the corn so deep that it never comes up. When you come to the end of the field you must turn the drill, and leave a space of about five feet betwixt these three rows of corn and the next, and so on. The five feet space that is left betwixt the rows of corn is to be ploughed with a hoe-plough as often as you can, the oftener the better, though even six or seven times; and that interval is to be kept in ploughing both to destroy the weeds and mellow the ground. Besides, the keeping the ground moved, makes the corn grow the better, and in greater quantity, and the straw stronger than the common way. I saw a proof of this —for the two sides of Lord Ducie's corn were both taller and better coloured than the middle row, where the ground was not loosened. And to mend this, they have sown the rows at a foot distance, whereas they were formerly at six inches; because you may pull up the weeds, and stir the ground with a hand-hoe betwixt the rows, The drill is drawn with one horse, a boy to lead him and a man to follow it, who lifts the drill quite up from the ground when he turns at the end of the field; and the lifting stops the corn from falling out till the wheels it runs upon are set agoing again. The hoe-plow must have two horses, a man to hold it, and a boy to lead them. They sometimes use oxen to the hoe-plough, or more horses if the ground is strong; but whatever draws must be muzzled, for eating the corn. By this drill you only sow half a bushel to the acre, which is a great deal of seed saved. If it is dry weather, and the fallow-ground not broke enough betwixt the rows of the corn, you may harrow and roll it. By this method you have a greater crop upon an acre than in the common way, though the ground is dunged. And next year you manage the same ground after the same way; and sow it again with wheat only; the corn must be sown where the interval was the year before; and the place where the corn is to be sown should be raised into a little ridge, to be all winter. They have had four years' experience of this way, wheat after wheat, and it grows always the longer the better.

I objected that the ploughing so much would be a vast expense. He said, that it did more than answer. And now I say to you, try it, and you'll know whether it is so or not, for I do not know.

On the Production of the Sexes among Sheep.

[Abridged from the *Journal d' Agriculture Pratique*, as translated in the *Mark Lane Express.*]

The general law which Giron de Bazareingues has recognized on the subject of the procreation of the sexes is as follows:—The sex of the product would depend on the greater or less relative vigour of the individuals coupled. In many experiments purposely made, he has obtained from the ewes more males than females, by coupling very strong rams with ewes either too young or too aged, or badly fed; and more females than males by an inverse action in the choice of the ewes and rams he put together.

But the following fact has nothing in common with those related by Giron de Bazareingues, and which has been repeated, with small variation every year, from 1853—the period at which the observations I have noted down began. This fact consists:—

1st. In that, at the commencement of the rutting season, when the ram is in full vigour, he procreates more males than females.

2nd. When, some days after, the ewes coming in heat, and in great numbers at once, the ram was weakened by a more frequent renewal of the exertion,—the procreation of females took the lead.

3rd. The period of excessive exertion having passed, and the number of ewes in heat being diminished, the ram also found less weakened, the procreation of males in majority again commenced. The abstract results have furnished two remarkable facts:—

1st. The ewes that produced the female lambs are, on an average, of a weight superior to those that produced the males; and they evidently lose more in weight than these last during the weakening period.

2nd. The ewes that produmales weigh less, and do not lose, in nursing, so much as the others.

If the indications given by these facts come to be confirmed by experiments sufficiently repeated, two new laws will be placed by the side of that which Giron de Bazareinques has determined by his observations and experiments.

On the other hand, as, at liberty or in the savage state, it is a general rule that the predominance in acts of generation belongs to the strongest males, to the exclusion of the weak, and as such a predominance is favorable to the male sex, it would follow that the number of males would tend to surpass incessantly that of the females, amongst which no want of energy or power would turn aside from generation; and the species would find in it a fatal obstacle to its reproduction. But, on the other hand, if it was true that the strongest females, and the best nurses amongst them produce females rather than males, nature would thus oppose a contrary law, which would establish the equilibrium, and, by an admirable harmony, would secure the perfection and procreation of the species, by confiding the reproduction of either sex to the most perfect type of each respectively.

Agricultural Intelligence.

Agricultural Exhibitions.

From the reports we have seen in the papers of the fall shows, both of county and township societies in different sections of the Province, we infer that these useful organizations are, upon the whole, in an efficient and improving condition. Our space would not admit of the briefest notice of the proceedings of all these societies, even were the reports fowarded to us. And this becomes the less necessary, since a detailed report is annually sent to the Board of Agriculture from each Society in Upper Canada, according to the requirements of the Agricultural Statute, and a condensed statement of these reports is published in that portion of this journal which is devoted to the Transactions of the Board.

The two Riding Societies of the county of Wentworth, and the Electoral Division Society of the City of Hamilton, united and formed one Exhibition in the Crystal Palace of that place, and it was eminently successful. The weather was fine, and the number of visitors very large, so that the capacious and delightful grounds assumed a very animated and pleasing appearance. The horses, cattle, and in short almost everything which goes to make up these shows was of excellent quality. Indeed the magnitude even of several of these *united* Exhibitions is said to equal the earlier shows of the Provincial.

The Township Show of Etobicoke was not, perhaps, quite equal this year to some former occasions, nevertheless, in point of quantity and quality, it was very good. This small township has for many years, as many of our readers are aware, taken the lead of township societies generally, and its great success has been the means of infusing new life and energy into the societies which were falling behind.

The West Riding of York, and the Township of York, united this year and held an Exhibition in Yorkville, which proved eminently successful in all the departments. It was said to be superior, in every respect, to the first Provincial Exhibition held in Toronto 15 years ago. These are pleasing signs of progress, and prove the advantages of two or more societies uniting, (occasionally at least,) in getting up an exhibition which, while it is replete with instruction, commands the respect of all intelligent observers.

A friend has sent us an elaborate report in the *Ingersoll Chronicle*, of the Norwich Show, which appears to have been quite, if not even more successful than the preceding. For a single township the number and quality of the animals, and articles on exhibition was not only satisfactory, but far beyond the most sanguine expectation of its projectors. Last year the number of entries was 550, but the number this season amounted up to 1,061! In the horse class we find there were no less than 156, and many of these animals of superior merit. Indeed the whole affair was excellent, and the greatest interest was displayed by a much larger number of visitors than is usually seen on such occasions. Much praise is due to the President, Gilbert Moore, Esq., and an efficient body of directors. The Society has erected a neat and commodious permanent building in the village of Norwichville, of the form of a cross, covering an area of 2,800 square feet. Persons not members were charged 10 cents for admission, which while it greatly increased the Society's funds was not felt as a burthen by individuals, who went away with the satisfaction of knowing that they had contributed something to so good a public object. We should like to see this principle carried out wherever practicable. The report concludes with a notice of "an agricultural pic-nic to be held in the Society's building, when addesses would be delivered by the Hon. David Christie, and the Hon. George Alexander,—the proceeds to be applied towards freeing the building of debt." We are happy to find these gentlemen, who are members of the Board of Agriculture, as well as of the Legislature, devoting themselves to an object so truly praiseworthy and patriotic.

The subjoined extract from the report will be found suggestive and interesting:—

"The peaches exhibited by Gilbert Moore were of the very best descriptions we have seen in Canada. We believe that he was the only exhibitor; no peaches of Canadian growth exhibited at the late Provincial fair at all equal

led them. We were so astonished at their size and richness that we sought out Mr. Moore and made enquiries as to his mode of culture, that all our readers might be in a position to grow his choice fruit. He informs us that the secret of the non-success of peach growing in Canada is that farmers do not understand their culture, and entertain the mistaken idea that the young trees require great care and a rich soil.—The consequence is that the trees grow too fast and do not mature. In 1860 he raised 200 bushels of splendid peaches. His mode of culture is to plant on gravel soil—the most barren that can be found. The trees grow very slowly and become domesticated to the soil and hardened against the climate. Where farmers have no suitable soil a good plan is to dig a hole for the trees, fill it with gravel, drawn from gravel pits, and plant the trees on it. No care should be expended upon them. They will grow best to be let alone. Would it not be a good idea for our farmers to take a note of Mr. Moore's mode of cultivating the peach?"

New York State Fair—1861.

Held at Watertown, September 17–20.

THE EXHIBITION OF LIVE STOCK.

(From the Country Gentleman.)

The Exhibition of Cattle was good, and included fine animals of Durhams, Ayrshires, Devons, Herefords, and Alderneys. Several of the great Durham herds of the State were not represented, but the great number of smaller contributors shows the extensive dissemination of these fine animals; and the excellent grades from them, on the grounds, indicate the great improvement which they have effected of late years. Among the Ayrshires were several very fine animals from S. D. Hungerford, and by James Thompson of Milton, Saratoga county; Brodie, Campbell & Co., had fourteen head on the grounds, one cow of which had given 84 lbs. of Milk in 24 hours; George Morton of Canada West, brought sixteen head, eleven of which took prizes; and Simon Beattie of Scarboro', C. W., exhibited a fine imported cow.

The Holland cattle of H. Holbert, Goshen, N. Y., remarkable for their singular markings of black and white, and claimed to be excellent milkers, were also upon the grounds.

Among the Herefords, were animals from the herd of H. Bowen of Sennett, Cayuga, Co., who exhibited 8 head; M. C. Remington of the same place, who had 9 head; and E. Corning, Jr., of Albany, who had 13 head, all of which took premiums. A. Stevens of Batavia, had 5 head of fine Devons; and A. B. Conger of Rockland, a large herd of Devons, Ayrshires, Durhams, and Alderneys.

The exhibition of Sheep was large and excellent. Mr. Chamberlain exhibited a large herd of Silesian, an George Campbell, Spanish Merinos. The chief exhibitors of South Downs were Samuel Thorne, Green & Mather, Thomas Aycrigg, of Passaic, N. J., and R. H. Avery, of Wampsville, N. Y., who presented 20 head. Fine Cotswolds and Leicesters came from our Canada neighbors—some, of great excellence. Among these exhibitors were S. Beattie and J. Snell, who had about 15 head each. Brodie. Campbell & Co., had 23 Leicester, and 3 Scotch Mountain Sheep—the latter newly imported, long wooled like the Leicesters, and handsomely, mottled with black and white on the face. They are curiosities, and have great hardiness to recommend them.

The display of Swine was perhaps the best ever made at a State fair. There were large numbers of the Suffolk, Essex, and Yorkshire breeds. Elihu Griffin and A. M. Underhill of Duchess Co., showed several fine specimens of Essex; E. B. Benham, of Dryden, Tomkins Co., Yorkshires; and V. W. Smiley, of Watertown, a number of handsome young animals of a cross between the Yorkshire and Suffolks—an excellent cross, of which we have before seen excellent specimens. There were many other exhibitors of excellent swine, among them J. F Converse, James Thompson, Hungerford and Heustis, and A. C. Clarke.

AGRICULTURAL IMPLEMENTS.

The collection of Agricultural Implements was excellent, but not so extensive as in some years. Nearly all the principal mowers and reapers of established reputation were on the grounds, such as Wood's, Ketchum's, Kirby's, Hallenbeck's, the Ohio, Cayuga Chief, the Buckeye and others. The mower and reaper made by J. & G. Lord & Co., of Watertown, called the Young America, and which has been mostly confined in its use to Jefferson county, appears to be among the best. The gearing is mostly shielded from dust and scattered hay, by an iron cover. Russell and Tremain's screw mower, which has now been in use a year or two, and has been tried and approved by some excellent farmers, has no cog-machinery, the motion being obtained by means of friction rollers acting on an endless screw. The rollers are 21 in number and are placed on the inner face of a driving wheel. The screw is about six inches in diameter. As the onward motion causes the driving wheel to revolve, the rollers one after another run on the flange of the screw and turn it. The only complete test of a machine is obtained by wearing it out, and more time is needed to prove the ultimate value of this mower.

Wood's self-raker, attached to his reaping machine, is one of the most simple contrivances for this purpose, that gives any promise of being useful. Johnson's cornstalk cutter is a simple attachment to a mowing machine, and was exhibited in connexion with Ketchum's one-horse

mower. The knives cut off with ease one row of corn at a time; the stalks drop in a trough, which opens at regular intervals, and leave the bunches on the ground. It will therefore cut as much as a horse can travel over in a day, taking a row at a time, or about six or eight acres. The stalks are yet to be placed on end in shocks together, a large portion of the labor—which is obviated when the stalks are cut by hand, the workman taking three or four hills of stalks in his left arm, as he cuts each one with a blow successively. The amount of labor saved may be known when it is determined how long a time is required to elevate the stalks on end and secure them.

The large exhibition of endless chain horse powers, shows the increasing estimation in which they are held by farmers. Among them were those of Emery & Co., of Albany, J. M. Harvey & Son of Amsterdam R. & M. Hardee of Cobbleskill, Westinghouse of Schenectady, Wheeler of Albany, and of the Watertown Agricultural Works. The grain separater of W. Dada of Hannibal, Oswego Co., is furnished with a screen for effectually separating oats from spring wheat, consisting of a smooth zinc plate, thickly perforated with holes that let the wheat pass through, but over which the oats slide in a horizontal posture. A horse fork for pitching hay was exhibited by W. H. Palmer of Jefferson Co., which operates by dropping, like Gladding's, but with a shorter arm, which is loosened and set free by a very simple contrivance. The "pinion hinge" gate of E. C. Leonard of Binghamton, excited interest for ingenuity and simplicity. A small cog-wheel or pinion is attached to the heel of the gate, in such a manner that when it is opened either way the pinion rolls in a rack, which carries it from the centre, thus causing it to fall shut by its weight. Carriage gates are opened by a cord attached to a post, without the driver dismounting from his seat, the self-shutting tendency closing it again. Experience, the only test, may prove this to be a valuable contrivance. It may be of value to some of our readers who wish a light and strong gate, that is but slightly acted on by the wind, to give the dimensions of the different parts of the gate to which we found these hinges were attached: heel piece, 3 inches square; head piece, 2 by 3 inches; the upper and lower horizontal bars, 2 inches square; the five intermediate ones, 2 by $1\frac{1}{4}$ inches. All these horizontal bars being thus of the same horizontal thickness, and mortised in the ends, are braced and secured by two wooden bars placed diagonally, and extending downwards from the top of the heel piece to the bottom beneath the latch, which are bolted or screwed at each crossing. These braces are 2 inches by half an inch, and being let into the head and heel pieces, exactly fit their thickness. The windmill of E. W. Mills of Onondaga Co., was in motion on the grounds, and is self-regulated by centrifrugal force. It is a small one, 6 feet in diameter, and sold for forty dollars, and is said to work well for a small force. Good collections of plows were exhibited by Lord & Co., of Watertown, and by Remington & Markham of Ilion.

J. Wait of Watertown, exhibited a very compact and apparently good grist-mill for grinding food for animals. The effective part was made of steel saws, which cut the grain into meal of a moderate degree of fineness. It will grind about ten bushels an hour. It does not grind so fine as buhr-stones. Its durability, and the amount of labor to keep the saws filed sharp, we could not determine; possibly formidable objections may exist here. The cost is $50, besides the horse power to drive it.

Boll's patent Stone-lifter came on the grounds with a granite boulder of about four tons weight grasped in its iron claws. The two wheels on which it moves, are very large, strong, and so far remote from each other as to allow very large stones to ride between them. These stones are drawn out of the ground by oxen working on a windlass, similar in operation to a stump-puller. Such as are three-fourths buried are readily drawn out, by drilling slight depressions into the two upper sides to receive the claws. They are easily carried and deposited in a stone wall. This is obviously a valuable machine for rocky regions of the country. Its cost is over $200.

Bullard's Hay-spreader, a model of which was shown, is apparently the best thing of the kind yet invented. Its singular and rapid motions excited a great deal of interest and amusement among the spectators. It was thought by some that the inventor had derived his leading idea from the motion of the hind legs of the grasshopper, but he disclamed any thing of the kind. The machine runs on two wheels like a cart, and the operating part consists of eight vertical pitch-forks, point downwards, which are worked so as to throw the hay backwards, each one striking the grass at a different moment. The motion is given to them by a revolving axle, nearly resembling a three-throw crank. One horse, drawing this machine, spreads in a most thorough manner a strip eight feet wide, and will go over three acres in an hour. Although such a thing is less needed since the introduction of mowing machines, yet if meadows are as heavy as all good farmers should have them, a few teddings while drying would greatly accelerate and perfect the drying process, and perhaps often enable the farmer to escape storms of rain.

DAIRY HALL AND ITS CONTENTS.

Dairy Hall contained a moderate but good collection of articles—among the rest were three large cheeses nearly three feet in diameter, and eighteen inches thick, from the large dairy of Jesse Williams of Rome. The Salt Company of Onondaga county had a large collection of vari-

ous kinds of salt, from the coarse crystals of solar evaporation, as large as walnuts, to the snowy white table salt, almost as fine as flour, and consisting of grains or crystals less than one hundredth of an inch in diameter. The collection of Vegetables was small and of moderate merit. Domestic Hall contained a good collection of various articles of domestic fabrics, and sewing machines in large numbers. The improvement in the facilities for the manufacture of cheese, was indicated by the large collection of Cheese Vats, for holding the milk and giving to it the proper temperature, as well as for ease in the management and transfer of the materials. All of these were heated by means of a plate or stratum of hot water surrounding the milk. Among others, we observed those exhibited by D. W. Maples of Homer, Cortland County; O. O'Neil & Co. of Utica; H. & E. F. Cooper of Watertown. (Roe's vat and heater;) and Wm. Ralph, Holland Patent, Oneida Co. The cost of these vats of equal size, was about the same, varying from size to thirty to fifty dollars. A. H. Emery's anti-friction cheese press, is constructed on a principle similar to that of Dick's, but with longer rolling surfaces, and with an iron axle, worked by a winch, working between and in contact with them. We estimated its power by calculation, if strong enough made, to be that of 25 tons, for a hundred pound force applied to the winch. It cut through and broke off short pieces of strong scantling. Those who are familiar with the labor of working butter by hand, will not wonder why there is so much bad butter owing to the amount of buttermilk left in it. Machines which abridge the labor some twenty times or more, have humanity as well as economy to recommend them. Two were on exhibition; Hotchkiss's is worked by a lever working on the knee-joint principle, and pressing the unworked substance between two surfaces; and Rhoade's, which has a corrugated roller passing alternately over it.

One of the most really meritorious machines, was the Clothes Wringer, manufactured by the Metropolitan Washing Machine Co. It must save labouring women a great deal of severe labor. It is attached by screwing to the side of a wash-tub, and the clothes are passed by turning a handle, between two rollers covered with India rubber. The force required is slight, and by moderate motion a large sheet was passed through in five seconds. It was left slightly moist, but dry enough to prevent any sensible moisture being imparted to a sheet of wrapping paper placed beneath.

Agricultural Discussions at the State Fair.

THE ARMY WORM.

On the evening of the 17th Dr. Fitch gave a very acceptable lecture on the Army Worm, interesting for his theory of its sudden and mysterious appearance. He stated that this insect, when done with its depredations, entered the ground to the depth of about two inches, the miller or perfect insect emerging two weeks afterwards, to lay its eggs. It probably deposits its eggs at the root of the grass. It has not been ascertained till recently what this insect is —it was believed formerly to be the common cut worm. Specimens had been sent from the Western States and from New England, and it has been found identical with an insect described 50 years ago in England. It is not the cut-worm, but strictly a grass moth, of which there are several species in this country, secreting themselves in grass. It is one and the same species all over the country—is most remarkable for the manner of making its appearance suddenly in countless millions, and departing as suddenly without leaving any apparent descend ants. It resembles in its destructive effects the eastern locust, but unlike that it cannot fly, but can only walk, constituting the infantry or foot soldiers merely. How then does it come? Dr. F. has no doubt that it is a constant resident here in the Northern States and that it ordinarily lurks in the wild grass of swamps. The reason that it is not commonly discovered is that we are driven away from such places by clouds of mosquitoes, or prevented by them from examination. There are no marshes near his residence, and no army worm has there made its appearance. "Sportsmen," (whom Dr. F. termed "bird murderers,") have probably observed large spots in such places, where the grass was all devoured. He asked why it had not come up along the Connecticut river this year, where in 1770, ninety years ago, it was so destructive? Simply for the reason that most of the marshy margins of the river are now drained—it being now chiefly confined to the sea coast, where drainage could not be effected. He thinks he has ascertained the reason of the mysterious and sudden appearance, which is this: The season was very dry last year, as is well known by the famine in Kansas, the swamps became dry, and thus gave the insect an unusual feeding range, favoring their increase. This year was very wet, the swamps were overflown, and the insects were driven out among the crops, and scattered their eggs over the country. Thus a dry season favors their multiplication, and a wet one spreads them. This is the present view, although circumstances may modify it, but he is fully persuaded it is substantially correct. In 1815 the army worm was very destructive; in 1816, a very dry year, the insect increased, and he infers that 1817 was wet—and also that 1769 was dry, and 1770 wet. He finds by examining an old medical work that the former year was remarkable for its heat, and from the papers of the day, that 1770 was remarkable for its storms, and he mentioned other corroborative evidence.

It seems, he remarked, that this insect is ordained by nature to keep huddled together in

swamps, in order that man may be able to effect its destruction. He proposes burning the grass when dry where no danger can result from the fire, and thinks an acre of them worth more to a herd of swine than an acre of potatoes. The importance of draining will also suggest itself to every one.

MANAGEMENT OF MANURES.

At the conclusion of his address, the subject of Barn-yard Manure was taken up, and the best means of saving and applying, discussed by partical farmers present. President Geddes said the result of his observation and experiments, were, first, that the manure yard should be so made that none of the manure should run off; secondly, that there should be plenty of straw to absorb all the droppings of the cattle; and thirdly, that the coarse manure thus made should be placed in piles with square sides, and with flat or concave tops, to catch the rains. If quite strawy, the heaps should be made as high as the labourer can easily pile them, to induce fermentation, and the tops should be *dishing* to receive water. In July, the outside should be cut down with a hay-knife, and the outside parts cast on the top, these being the only undecayed parts, the rest of the heap being already well decayed. The manure will thus be in good order for wheat lands, and will greatly assist the growth of the subsequent crop of clover. This is the best mode of managing manure on grain farms, where an abundance of litter is used for cattle. He has now a stack of straw containing at least a hundred tons, (last year it would have sold for $300 to the paper-makers,) and not cattle enough to work it down; to put this under shed would be simple folly—where there is little straw and much dung, a shed may be useful. Where there is much sheep dung, it would fire-fang if covered. Dairymen will want a shed; grain farmers, who have much straw, corn-stalks, &c., will not. As for his own mode of farming, he would thank no man for furnishing a shed, however perfect, even with a slated roof, for if the manure were under it he would have to cut it out, and it would be of no use. He prefers to apply manure to wheat or grass: if used for corn, it fills it with weeds. He applies it to the surface of the wheat, and always drills in the seed,—remarking, in passing, that although once opposed to drilling, he was now "converted to the faith," and thinks it the best and most certain way. If the manure is applied to the surface, the rains carry it into the soil; but if buried too deep, it is difficult to get up again. He thinks clover manure of the utmost importance. It gives a crop of corn that needs no hoeing but horse cultivation only. He has thus raised sixty-seven bushels to the acre, and the land was left cleaner than in other fields with hoeing. Clover also forms an excellent manure for other grain crops, oats, barley, wheat, &c. He has had wheat on clover sod at the rate of 33 bushels per acre for 20 acres, and regarded the clover as at the bottom of this heavy product. But he wants the manure in order to get the clover. He sows plaster on wheat, oats and clover, evenly by a machine, at the rate of two bushels per acre.

Moses Eames remarked that most farmers largely wasted at least half their manure, by not securing the liquid parts. He saves all in winter by keeping his cows in stables, and absorbs the liquid by litter. He thinks a load of this manure as efficacious as a load of plaster, and applied to meadows has obtained from them over three tons of hay per acre. He prefers to apply it in the fall, but never when the ground is frozen, as the rains would wash much of it away from his hilly land to that of his neighbors. He usually applies thus five loads of 40 bushels each per acre. He prefers to compost it with muck or earth, to render it finer and more friable, and insure its spreading. Fresh and wet, it does not spread evenly. He remarked that farmers might as well attempt to raise crops without manure as bankers to bank without money. His top-dressed meadows have yielded him this year 240 tons of hay, at about two and a half tons per acre. In one case, he had four tons to the acre, on grass land seeded from the fresh manure, the cattle having eaten hay with plenty of seed in it—no weeds were thus produced but thistles, and these were all killed by mowing the first year. He prefers to apply his winter manure in spring, and plow it in not more than three inches with a gang plow—if buried deep, he never gets "its strength up to the surface again.

In answer to a question, President Geddes said his preference was never to apply manure directly to corn, but for avoiding weeds, to manure his clover, and put on corn afterwards.

—— Andrews of Conn., said that farmers in that state had scarcely enough straw to litter properly their cattle, and he applied it in spring, in a green state, to corn, which was planted on ridges made by throwing two furrows together. The manure is wheeled out during the winter under a shed, piled up, and is ready for spring application. A drain from his yard carries the liquid manure to the meadow, and the irrigation thus given has produced heavy crops. He sows half a bushel of equal parts of clover and timothy per acre; and has found that thick sowing produces fine fodder for cattle, instead of the coarse feed resulting from thin sowing.

A gentleman whose name was not heard, had never found any evil result from drawing out and spreading his manure during winter—his land was not hilly, and the rains did not wash it off, on a frozen surface. He uses muck, pea-straw, and other refuse matter for his hogs, and makes from them over twenty loads of good manure yearly; and whenever the supply of

straw is small, carts in large quantities of leaves from the woods for littering his cattle.

T. S. Faxton of Utica, spoke of the great improvement which had been made among farmers generally in the saving and managing of manure. He said that so long ago as 1820, it was common for the Dutch farmers to draw out their manure in winter, and place it on the ice of the Mohawk river, in order that it might be carried off out of the way on the first thaw. The manure "filled the land with weeds," and that appeared to them a sufficient reason for regarding it as a nuisance. The subject is now better understood. He has found out conclusively that the sooner manure is applied to land after being dropped from the animal, the more we get from it. If piled a year much of it wastes.

S. Walrath of Canton, St. Lawrence Co., said he had learned much in twenty years—his most valuable crop now is his manure crop; then it was his poorest. He carefully excluded foul seed from his manure, allows no weeds to ripen, and cuts his hay green, or before the seeds have formed. He can make finer and sweeter butter than his neighbors who allow cows to eat bad flavored weeds.

T. C. Peters of Genesee Co., remarked that one class of farmers cannot do as others may be able to—they differ in their management, but both are right for the kind of agriculture each practice. He thought that dairy farmers managed their manure best—that manure sheds are not necessary for our climate, a d that any amount of rain will not injure manure if the discharge from the eaves of the barns does not fall upon it. He makes a distinction between *barn yard* manure (often containing much straw) and *stable* manure; stable manure proper should be applied to the current crop; but yard manure should be first piled to rot.

To embody the substance of the discussions, the following resolutions were adopted:

1. Manure which consists chiefly of the droppings of animals, should be applied as soon as practicable to the soil.

2. Manure consisting largely of straw, cornstalks, or other fibrous matter, should be first rotted to become fine.

3. Manure should be applied at or near the surface of the soil, should be slightly buried.

4. For hoed crops, and especially for corn crops, it may be buried deeper than for straw crops.

Beet Root Sugar.

Editors of the Agriculturist.—In answer to the enquiry of *Briar* in your last number, the following mode is pursued in Germany (according to Professor Lampadius) in making beet sugar upon a small scale. The roots having been washed, are sliced lengthways, strung on pack-thread and hung up to dry. The object of this is to let the watery juice evaporate, and the sweet juice being thereby concentrated is taken up by macerating the dry slices in water. It is managed that all the juice shall be extracted by a very small quantity of water. The Professor obtained four pounds of fine white grained sugar from 110 lbs. of roots so treated, and the residuwm yielded seven pints of spirit. Ackard says, that a ton of roots treated after the same manner, gave 100 lbs. of raw sugar, which gave 55 lbs. of refined sugar, and 25 lbs. of treacle. I have Chaptal's mode which is much more elaborate, while the result is nearly the same. The syrup is to be boiled and skimmed until sufficiently concentrated, which is known as follows. The skimmer is dipped into the syrup and drawn out, some of the thick syrup which adheres to it is taken between the thumb and forefinger, and held there till the heat is reduced to that of the skin; the finger and thumb are then separated, and if the syrup is of proper strength a thread will be drawn out which snaps, and has the transparency of horn, or rather barley sugar, this is called *Proof.* The fire is then put out, and the syrup is carried to the cooler, a vessel sufficiently large to hold all the syrup; here the sugar is to crystalize. As soon as this commences, the whole is well mixed and stirred before it becomes too stiff. Earthen molds are then filled little by little, when full, are carried to a cool place. As the crystalization goes on, the crust formed on the top is frequently broken, and the whole stirred till the crystals are collected in the centre, it is then allowed to go on without further disturbance. In three days the pegs in the moles may be removed, and the treacle allowed to run out; in a week this is mostly run off. The process for refining is the same *as that* pursued in the West Indies.

P. S. Two pounds of the residue of the roots, and half a pound of hay, are considered sufficient food for a day, for a fair sized sheep, and will keep them in fine condition.

I am, &c.

R. H. A.

Etobicoke, Oct. 4, 1861.

Horticultural.

Labels for Fruit Trees.

A good, durable, and very cheap label for standard or bearing trees, is made of sheet tin, Cut the tin in siripes about six inches long, somewhat in the form of a wedge, about a fourth of an inch wide at one end, and three-fourths at the other. Write the name near the wide end, with any sharp steel instrument, as an awl, or end of a file ground sharp, bearing on hard enough to go through the tin coating, and reaching the iron. (In a few months the rain, by penetrating to the iron, will rust it, make the

name quite conspicuous.) The label is then attached to the tree by bending the narrow end once about a side limb. As the tree grows this coil will expand, and not cut the bark. On this account thin tin plate is better than thick. The coil should pass around but once, or it will not give way freely to the increase of growth.

This label is so simple that it can never get out of order, being nothing else than a single strip of tin; and any tin worker will cut them of scrap or refuse plate for about ten or fifteen cents per hundred We have given them a full trial, and know their success.

Grape Culture.

The following is a brief outline of an address on the culture of the grape in Canada, delivered by the President, J. Hurlburt, LL.D., before the Fruit Growers' Association of Upper Canada—a copy of which was asked by the Society for publication in the *Canadian Agriculturist:*

THE CLIMATE OF CANADA AS ADAPTED TO THE CULTURE OF THE GRAPE.

Gentlemen,—In the discharge of that part of my duties which enjoins upon the presiding officer of this society "To deliver an address on some subject relating to the objects of the Association," I have selected the one here announced as being of sufficient importance to command more attention than has been given it. The indifference manifested in most parts of the country to the culture of the grape is to be attributed, no doubt, in part to the impression that the climate of Canada is unpropituous to it, and in part to want of information upon it, and indifference. Directions as to the best mode of culture are easily obtained. If this Society can be the instrument of convincing the people of this country that many varieties of the grape can be grown here with profit, no doubt the experiment will be made. Canada, covered with the vine, would appear to Europeans a very different country from their present estimation of it. This one fact would be worth volumes written on our climate, and would do much to turn the tide of immigration to our shores.

I ask your attention—

First,—To the temperatures and quantities of rain in the vine-growing countries of Europe as compared with large areas in Canada where similar conditions of climate are found.

The accompanying table will give the conditions of climate as to temperatures and quantities of rain in the vine-growing countries of the old and new world. In all inland countries, where the season is shorter, higher temperatures are required than upon the sea coast. While the grape is somewhat exacting in requiring a summer temperature between 63 and 80, no definite quantities of rain seem aosolutely necessary, as it has been found to flourish in localities where there are twenty inches, and in others only one tenth of an inch in summer. In looking over this table it will be found that in the grape-growing regions in America the temperatures are higher and the quantities of rain greater than in Europe. California and New Mexico present, however, exceptions in the almost total absence of rain in spring and summer.

CLIMATES OF THE VINE-GROWING REGIONS.

EUROPE.	LAT.	ALT.	TEMPERATURE			AM'T RAIN, INCHES.			
			summer.	winter.	year.	spr'g	summer.	autumn	year.
Lisbon.....	38.42		70.9	52.5	61.4	.....			
Madeira...	32.37	1200	71.3	61.9	66.9	5.1	2.3	7.0	30.9
Turin, Piedmont....	45.11	857	71.5	33.5	53.1	8.2	9.0	11.5	33.5
Vienna, Lyons in the Valley of the Rhone	45.32	300	71.8	38.7	55.3	10.2	9.5	10.4	31.4
Bordeaux..	44.50	s.lev'l	71.1	43.1	57.	7.3	7.4	10.3	34.
Azores	37.50	....	72.5	57.3	63.9	6.6	3.6	9.5	31.4
Vevay, Switzerland...	46.28	12.50	65.7	55.9	50.8	7.9	10.8	11.1	33.8
Mankinn, Rhine ...	49.29	258	67.4	33.0	50.3	6.3	8.0	7.4	27.0
Dijon, France	47.19	746	69.6	35.4	52.9	7.1	7.5	9.3	32.2
Chalons, N. E. France.	48.57	492	66.8	37.1	52.2	5.4	6.2	6.1	23.3
Bucharest, Danube...	44.27	(?)	65.3	27.8	46.8	...	...	...	....
Astrachan, Caspian Sea	46.21	s.lev'l	75.9	19.2	50.	...	...	...	....
AMERICA.									
Camden, S.C	34.15	250	77.9	47.4	62 6	13.6	20.8	9.8	54.4
San Antonio, Texas....	29.25	600	82.2	54.2	69.6	8.9	9.4	6.0	32.8
Cincinnati, Ohio....	39.06	550	73.0	32.9	53.8	11.9	14.2	10.0	47.5
Cleveland "	41.42	625	67.0	30.0	48.9	6.5	8.7	7.7	32.3
Ann Arbor, Michigan.	42.10	750	66.3	25.3	46.4	7.3	11.2	7.0	28.6
St. Louis, Missouri..	38.37	450	76.2	33.4	55.5	12.7	14.0	8.7	42.5
Albuquerque, N. M.	35.13	4576	73.1	34.4	53.8	0.6	5.6	1.2	8.4
Rancho del Chino, Cal.	34.00	500?	72.6	54.8	63.3	2 5	0.1	1.6	9.7
Hamilton, Canada W	43.15	332	71.9	...	...	6.87	9.81	8.68	31.77
Ancaster, Canada W	43.15	617	65.1	25.9	45.6	6.87	9.81	8.68	31.77
Toronto ...	43.39	3.1	64 8	24.5	44.3	7.16	9.57	10.39	31.35
Montreal. ..	45.31	50	71.4	17.8	45.7	..	11.88	...	47.28
Quebec....	46.19	100	69.1	12.8	41.4	.....			

Bordeaux, in the south-west of France, famous for its delicious vines, has a less summer temperature than Montreal in Lower Canada, or Hamilton, at the head of Lake Ontario. Indeed Hamilton and Montreal have higher summer temperatures than most of the vine-growing countries of Europe. Bossingault gives some interesting facts relating to vine culture at Schabzburg in Flanders. The lowest summer temperature was 63° 1′, with 311 gallons per acre; the next 66°, and 184 gallons to the acre; the highest was 71°, and 544 gallons; the mean for summer of 67° gave 625 gallons per acre, —the highest recorded. (We have a fact analogous to this in the yield of the Indian corn, as

given by Coleman; although a tropical and sub-tropical plant, it produces four times as much where the summer temperature is 67° and 68° as at the south, in a summer temperature of 80°.) Where the temperatures were 63° and 66° the wine was scarcely drinkable, but was unusually good with the summers at 67° and 68°. The lowest temperature given for the vine-growing districts of the United States, is that at Ann Arbor, Michigan; for spring, 45° 5′; summer, 66° 3′; autumn, 48° 4′, and winter, 25° 3′. The next is Cleveland in Ohio; summer, 67°, and winter, 30° 8′; but the cold of winter has very little effect upon the vine. The locality having the least rain is California, one-tenth of an inch in summer, and but nine inches and a half during the year. The place having the most is at Camden, South Carolina, 20. 8 inches in summer, and 54 during the year. The quantity of rain and the degree of humidity in the air most favourable for the vine in the interior climates, are questions of difficult solution, and certainly, impossible with our present limited information on the subject. The European grapes are extremely sensitive to great extremes from drought to excess of rain, but native varieties may be cultivated adapted to our peculiarities of climate. The remarkable uniformity of rain and humidity throughout most of the Valley of the St. Lawrence, are favourable for the vine. Probably the south western portions of Upper Canada, and the districts south and west of Lake Erie, may be found to combine, in the highest degree, those conditions of climate most propitious to the vine of any region east of the rocky mountains. Experience, however, would be our guide here.

Secondly,—The extent over which the wild grape may be found growing in Canada may be some indication of the areas over which the grape may be cultivated, and especially native varieties. Sir John Richardson found the frost grape (*vitis cardifalia*) as far north as the south end of lake Winnepeg on the 50th parallel. Sir George Simpson says, "Even the vine runs *abundant* on the Kaministiquaia, a tributary of Lake Superior from the north, at 49° and 50° north latitude." Native vines are found throughout the whole of the Canadas within the limits just named; they are generally co-extensive with the great forests of deciduous or leaf-falling trees, and as a general rule wherever the maple grows. They are hardy, very acid, prolific bearers, and of good size. Kaemtz assigns latitude 47° 36′ on the Atlantic Coast of France, 49 in the interior, and 50° 20′ on the Rhine at Coblentz as the northern limits of the vine in Europe. In Germany it does not pass 51°, and extends to about the same parallel in Eastern Europe. Our hardy native vines may be made use of in the culture of wine-producing grapes. Their natural luxuriant growth over such extensive areas, is a very significant fact, and may be some indication of the limits within which even European varieties may be successfully cultivated. At all events when a plant is found like the vine in Canada spontaneously springing from the soil, we have the best proof that those regions where it has established itself, are by nature adapted to it. What then may these same vines become under the fostering hand of the skillful gardener. That kind of culture which has educed from the sour crab apple the beautifnl and delicious specimen of that fruit now before us, and done so much in improving every variety of our fruit, cannot be lost upon the wild grape, and may bring from it berries equally luscious with the European varieties and much better adapted to our climate.

It may here be incidentally mentioned as a very good guide as to the climates favourable to the grape, that it has been found by experience that wherever Indian corn matures the fruit of the grape will also ripen. Johnson, Faigneaux and Moreau, the best authorities, place the vine, the last two as high, and Johnson two degrees higher than Indian corn. The northern limits of this cereal on this continent will be found as high as the Saguenay in Lower Canada, a part at least of New Brunswick, through most of the Canadas, and as high as latitude 54° on the Saskatchewan. We might considerably curtail these limits and still have an immense field for vine culture. It is a question of the very first importance that attention should be given to the improvement of the native vines, from which we may hope to get varieties better adapted to our climate, and which would be surer and more prolific bearers.

Thirdly,—The results of actual experiment in grape-growing in Canada, have been most encouraging. Upon three small and young vines (upon wood of the second year's growth) within sight of where I am writing this, I have counted more than one thousand bunches of at least half a pound each. These are of course grown entirely in the open air. They are the Isabella. Of the black Hamburg, it is not unusual to see clusters of two and three pounds weight, and even much larger when grown under cover. But I need not specify particular instances; the best proofs of success are exhibited at our Autumn Shows. The conditions of our climate in temperatures and quantities of rain, the luxuriant growth and prolificness of the wild grape throughout the country, and the success attending the feeble and isolated efforts in the culture of the vine, give us abundant assurance that the grape may be grown with profit over extensive areas in Canada.

Apple Orchards, Varieties, &c,

To the Editor of the Agriculturist.—Notwithstanding all that has been said and written upon the subject of fruit culture in the various periodicals of the day, I find as the result of

my observations during a somewhat extensive tour this season, through the western part of Canada West, that much information is yet wanted, and to that end we should continue to add line upon line, and precept upon precept, until the subject is thoroughly investigated. The great point in setting out an apple orchard, after properly preparing the soil, is to have a selection of such varieties as are known to be adapted to our Canadian climate, and at the same time of such excellent quality as to be readily marketable. Much has been said about the failure of trees sent over from the United States, and I am convinced that, it is rather owing to the fact that the varieties usually grown there are such as have been propagated with special reference to the wants of the South and West, than to any inherent fault in the trees themselves. A variety of first rate excellence in Western New York, Pennsylvania, or Ohio proves often worthless when grown further north. Another thing I will mention, viz.: the desire on the part of farmers to run down prices and get cheap trees. The American agents knowing the fact that their trees are unsaleable at home, and having large stocks on hand, will readily submit to take almost anything offered in order to effect a sale. Our own nurserymen on the other hand have extra difficulties to contend against. Owing to the severity of Canadian winters, many trees are killed between the time of raising from seed till they are fit to send out as grafted four year olds, and those that then survive may be considered as acclimated, and of far more intrinsic value than trees grown in a milder and more equable climate.

As the result of my observation I give the following list of apples as especially adapted to Canada, and although the list is short it embraces all that are really desirable.

Summer varieties :—Red Astrachan, Early Harvest, Keswic Codlin. Autumn varieties :—Fall Pippin, Gravenstein, Snow Apple, St. Lawrence. Winter varieties :—Northern Spy, Baldwin, Colvert, Ribston Pippin, Pomme Gris, Roxbury Russet, Talman's Sweet, and Rhode Island Greening.

Some will object to the Northern Spy on account of the length of time it takes to come into bearing, but if it does, it proves extraordinary hardy, productive, and long lived; and I noticed in Huron County that of many hundreds of trees sent out from the U. S. Nurseries almost the only remaining survivors were Northern Spys. The tree has a habit when young of producing an over abundance of wood, which should be kept in check by summer pruning. As a general thing it is undesirable to plant out trees in the fall, except on light well drained soils. And where trees have been ordered for this fall I would strongly recommend that they should be heeled in, in a dry spot int he garden, and planted out in spring; or if planted out this fall they should be planted shallow, well staked, and a mound of earth a foot high raised round the stem, said earth to be levelled again in spring.

Hoping to see the subject of orcharding still further discussed in your columns, and promising to contribute my mite to the cause.

JOHN MACKELCAN, Jr.

Hamilton, C. W., Oct. 7th 1861.

Peterborough Horticultural Society.

We have pleasure in noticing that this new Society, the organization of which this spring we recorded in a recent number, has lately had a successful meeting. Amongst the names of exhibitors we find those of the Rev. V. Clementi, President of the Society, Mr. Sheriff Hall, Mr. J. Gilmour, Mr. Kempt, Mr. P. Cooney, &c. We take the subjoined report of the meeting from the *Peterborough Review* of Sept. 27th.

"On Friday last the primary show of the Horticultural Society was held in the Town Hall, the use of which was kindly granted for that purpose by his worship the Mayor. The weather was most unpropitious: the rain clouds which had, for some time previously, been gathering above our heads commenced, early in the morning, to discharge their contents with an intensity and a pertinacity sufficient to damp the spirits as well as the bodies of those engaged in the endeavour to make the exhibition worthy of the patronage of the public.

Notwithstanding this *contretemps*, the tables, when the doors were opened at one o'clock, presented, thanks to the ladies who had furnished them with an abundance of elegant and tasteful floral designs and bouquets, a very charming appearance.

Mr. John Gilmour had converted the dais at the end of the room into an extemporaneous greenhouse, where were displayed choice collections of Cacti and other tender and interesting plants.

The exhibition of fruit was, partly owing to the season and partly to the day itself, on a very small scale. Mr. Carver's plate of plums, however, judiciously gathered, with their beautiful bloom well preserved, was universally admired.

The specimens of vegetables were creditable: had the weather been more favourable a greater quantity would have been, we have reason to know, forwarded to the Committee.

At five o'clock the doors were closed, and re-opened at seven, when a large number of visitors were present, whose ears were gratified by the spirited performances of the Peterboro Band, who, with their accustomed liberality, gave their services to the Society, and by their enlivening strains enhanced greatly the pleasures of the evening. At eight o'clock the President, the Rev. Vincent Clementi, addressed the assemblage, and then announced the result of the labors of th e judges.

On the whole we may reasonably consider the Society to be an established fact. It has

been ascertained satisfactorily what can be done in our town for the promotion of a taste for horticulture; and we anticipate next year, an augmented subscription list, greater competition, and even more attractive shows."

Hardy Bulbs.

The time has nearly arrived for planting hardy bulbs, as Tulips, Hyacinths, Narcissus, Crocus, &c. October is the best month for planting them, but any time before the ground is frozen will answer, although it is preferable to have them in the ground a few weeks before extreme cold weather sets in, so that they may have a little start which will make them flower earlier and stronger in the spring. They may be planted either in beds by themselves or in groups in the borders. If the grounds are extensive and the number of bulbs large, a bed in the shape of a parallelogram four feet in width and of any length will be found the most convenient perhaps. An oval bed, where the number of bulbs is not great, will be found as good a shape as any other. The bulbs should be planted with great regularity, the use of a line in planting being quite necessary. A tulip bed where the bulbs have been planted without any regard to this rule, has a careless and slovenly appearance, quite unpleasing to the eye.

The soil for bulbs should be a good loam, rather light, and enriched with a little old, well rotted manure, cow manure being preferable.—The soil should be fifteen inches deep and thoroughly prepared by digging and pulverizing with care. In planting, a handful of sharp sand should be put in each hole before the bulb is placed in it. Hyacinths and tulips should be planted about three inches from the top of the bulb to the surface of the ground, and about six to eight inches from each other. A little protection by means of litter, is of service in very severe winters, but must be removed early in the spring. Small bulbs, such as Snowdrops, Crocuses, &c., may be planted as a border to the tulip bed, or will form very pretty small beds by themselves. Plant them about an inch and a half deep. It is well to cover them slightly during the winter, as although they are perfectly hardy, yet when the ground is bare in the spring, the frost is apt to throw them out when unprotected.

It is usual to take up the bulbs of Tulips and Hyacinths every year after they have done blooming, as they do better than if allowed to remain in the ground, but it is not absolutely necessary. A very good bloom may be obtained for two or three years without removal, but as the foliage of the spring bulb soon decays after the flowering is over, the bed will be bare during the greater part of the summer. For this reason it is well to have a provision of bedding plants or asters to set between the bulbous plants in May or June, which will keep the bed covered and beautiful after the bulbs have been removed. —*Country Gentleman.*

Soldiers' Gardens.

The Emperor of the French, ever mindful of the comforts of his fine army, has not let this want escape his watchful attention. By a paragraph which appeared in a late number it will have been seen that his Imperial Majesty has established a soldiers' gardens all round the camp at Chalons, and that the experiments has been attended with the most complete success. Plots have been marked off for the soldiers' gardens, tools and seeds have been provided, and a market has been set up in the commissariat, where the products are all purchased from the martial gardeners. We are told, further, that the men have all taken to these novel pursuits with the greatest delight, and that, under the numerous busy hands, the dusty plain of Chalons is likely soon to be transferred into one vast kitchen garden. We do not see why a similar experiment should not be tried at Aldershott.—It is true that the soil there is not of the most fertile description; but human skill and patience would do a great deal to warm it into fruitfulness. The Chinese do wonders in producing fertility in the desert; and in Malta golden orange-groves have been raised by means of artificial soil on the barren rock. The twenty thousand pairs of sturdy hands at Aldershott would soon turn up and render friable the stubborn clay, and there is manure enough at hand to raise anything. There is nothing that an Englishman likes so well as a garden—nothing in which he takes so much pride or works at at with so much pleasure; and if, as in the case of Chalons, he were furnished with the additional incentive of a market, there is no doubt but that the soldier would take to it with a zest which would banish all dread of his great enemy *ennui*, whilst it would keep him out of debasing and health-destroying amusements. Gardens would furnish to our soldiers healthful occupation for their leisure time: they would humanize and civilize their tastes; they would enable them to make some slight addition to their scanty pay: and they would aid the hygienic arrangements of the camp by furnishing a cheap and constant supply of fresh vegetables. Even if the latter should cost a little more than they could be purchased for in the market, the money would be well laid out, and there would be this advance, that, being grown on the spot, they would be always on hand, fresh, and ready for use. Turning from the useful to the ornamental, abundance of flowers might be cultivated; and we see no reason why an occasional flower show should not enliven the monotony of the camp. We see by the daily papers that one has already been attempted, and with a very fair amount of success, in a much more unlikely locality. A parish clergyman has got up an exhibition this year in dismal, dirty, murky St. Giles's, and the visitors have been agreeably surprised by the pretty specimens which the

poor inhabitants have contrived to raise on the roofs and window-sills of their squalid tenements. Let us, then, make the attempt on open, breezy, salubrious Aldershott, and see whether we cannot transform some of its boggy, sandy surface into pleasant patches of flowers and vegetation. —*United Service Gazette.*

Transactions.

Meetings of the Board of Agriculture.

Toronto, Sept. 3, 1861.

The Board met this day, pursuant to notice, at their office, at noon.

Present,—Messrs. E. W. Thomson, President ; Hon. D. Christie, A. A. Burnham, R. L. Denison, Hon. G. Alexander, Wm. Ferguson, Jno. Barwick, Professor Buckland, Dr. Beatty, J. E. Pell.

The minutes of previous meeting were read and adopted.

Messrs. James Johnson, of London, chairman of the Local Exhibition Committee, and John Carling, M.P.P., were present, and submitted a communication from that committee in reference to their financial position, embodying a letter from the Mayor of the city of London, in which the mayor informed the committee that the council had endeavoured to induce the East Middlesex Agricultural Society to convey to the city certain lands within the city limits, upon consideration of the city paying the amount necessary to complete the works for the exhibition, but the society had declined the proposition, and the council would not consent to advance the amount required upon any other terms. The communication from the local committee also embodied the following resolution:—

"Moved by W. Barker, seconded by J. Carling, and resolved,—That in consequence of the assurances given to the deputation of this association by the members of the Government and the members of the Board of Agriculture, in relation to the loan of $3000 which the deputation applied for, this committee feels itself justified in ordering the works to proceed forthwith, and order it accordingly."

Mr. Carling also presented a communication from the Local Committee, recommending the acceptance of a proposition of certain parties in London to light the exhibition building with gas, on condition that they should have the use of the building on three nights during the week of the exhibition.

Mr. Sheard, architect, was in attendance, and submitted the plans of the building proposed to be erected by the Board for offices and museum.

Mr. Dalton, barrister, also appeared, and presented a draft of lease of the property proposed to be taken by the Board, for the purpose of building offices, &c., upon.

The Secretary presented the following communications:—

From certain persons resident at Riversdale, in the county of Bruce, in reference to some local difficulties in regard to the place of holding the Greenock township fall show, and asking the advice of the Board in the premises.

From the Smith's Falls Branch Agricultural Society, stating that although that society had made their reports and deposits regularly with the South Lanark County Society for the two years last past, they had received no share of the government grant, and would in consequence be obliged to give up the Society, unless they could make their reports direct to the Board, instead of to the County Society.

From Mr. John J. Beatty, of Streetsville, representing the desirableness of effecting an arrangement with the railway authorities, by which exhibiters of cattle would be enabled to avail themselves of the reduced charges for railway carriage on the two or three days preceding the week of the exhibition.

From Mr. J. Crawford, of Scarboro', in reference to the appointment of judges by the East York Agricultural Society in accordance with the request of the Board.

Mr. Pell reported that he had proceeded to London, as authorised by the Board, and had made an agreement with Mr. Campbell, contractor for the exhibition building, to put up the tables, stalls, flower stands, &c., according to plans and specifications, for the sum of $518.58.

It was then moved by Mr. Christie, seconded by Mr. Barwick, that the plans submitted by Mr. Sheard be adopted.—Carried.

Mr. Johnson, chairman of the London Local Committee, represented the position of the committee in regard to finances, and stated that they were desirous of obtaining an advance from the Board, in anticipation of the expected government aid, in order to enable them to proceed with the works for the exhibition without interruption.

Resolved,—That the resolution adopted at

the last meeting recommending the local committee to apply to the government for assistance, be so amended as to guarantee the repayment of the sum so advanced within a period of four years from the date of the exhibition at London this year.

The Board adjourned at 2 p. m. for one hour.

The Board resumed at 3 p. m.

The draft of the lease submitted by Mr. Dalton was discussed and approved, and the President was authorized to sign the same on behalf of the Board.

Moved by Mr. Pell, seconded by Mr. Barwick, and

Resolved,—That the Board will appropriate the sum of five hundred dollars for internal gas fittings to the exhibition building, and open the exhibition on the evenings of Wednesday and Thursday, managing the same, and receiving all the receipts, providing the Local Committee lay the main pipes thereto.

Resolved,—That it be an instruction to the committee appointed to let the booths upon the exhibition grounds, that a condition shall be inserted in the license that no sale of liquors or refreshments shall be allowed after six o'clock, p. m., each day.

Resolved,—That Col. Thomson, and Mr. Denison be a committee of this Board, to call upon the Mayor and corporation of the City of Hamilton, for the immediate repayment of the two thousand dollars loaned by the local committee to the said council at the time of the last Show, and, therein failing, to take such steps for its collection as they may deem advisable.

Resolved,—that provided a banquet be got up at London, in connection with the exhibition, this Board authorize their Treasurer to take one hundred tickets to said Banquet, provided the price does not exceed one dollar each.

The Board then adjourned to Tuesday, 24th Sept., at the Show grounds, at London.

London, Monday evening, Sept. 23, 1861.

The Board met this evening, by special notice, in the Tecumseh House, London, at half-past seven.

Present: Messrs. R. L. Denison, A. A. Burnham, Hon. D. Christie, Jno. Barwick, Dr. Beatty,

Mr. Barwick, President of the Agricultural Association, in the chair.

The minutes were read and approved.

Mr. Johnson, Chairman, Mr. Cornish, Mayor of London, Mr. Carling, M.P.P., and several other members of the local committee, waited upon the Board, and submitted the following communications and propositions:—

A letter from Mr. Raymond, of New England, to be allowed to enter the grounds for the purpose of selling an article of merchandise.

A proposal of Major Shanly, of the London Volunteer Artillery, to five a salute upon the formal opening of the exhibition.

A request of the five companies of London to be allowed a tournament or trial of Engines, on the show ground, on Thursday 26th.

A request from the Local Committee for an increase in the price of tickets to the banquet, proposed to be taken by the Board, so as to allow for the furnishing of wine for the invited guests.

An offer of the manager of the gas company to supply gas at the evening exhibitions at $50 per night.

An enquiry as to whether the Band of the Royal Canadian Rifles, or other Band, would be engaged for the evening exhibitions.

An enquiry as to the arrangements to be made for the trial of plows.

An application of Mr. Barnard to be appointed Auctioneer on the grounds.

An enquiry as to the direction of the police on the grounds.

A request that the Board would advance $3,500 to meet the expenditure on the works for the exhibition, in anticipation of the expected aid from Government.

An enquiry from Mr. F. W. Peters whether the committee would require the bells of St. Paul's Cathedral to ring this year as at the last exhibition held here.

A resolution from the local committee requesting the Board to furnish each member of the local committee who has attended their meetings with twenty quarter dollar tickets for the use of their respective families, and that their carriages be admitted free to the grounds,

Some observations were also made on the subject of erecting a general committee room, which had not yet been provided by the local committee.

The members of the local committee then retired.

It was then Resolved, That the request of Mr. Raymond be not granted.

Resolved,—That inasmuch as the Governor General cannot attend to open the Exhibition, as invited by the President of the Association, the Board does not consider it expedient to institute any other formal opening, and therefore the proposition of Major Shanly to fire a salute on the occasion is respectfully declined.

Resolved,—That a trial of Fire Engines within the grounds would be quite incompatible with the character of the Exhibition, and would be an inconvenience, that no such trial has taken place at any former exhibition, and therefore the Board feel it incumbent upon them to decline the proposition of the London Fire Companies on this occasion.

Resolved,—That the resolution in regard to the tickets to the Banquet was adopted at a full meeting, and the Board does not now feel justified in departing from it.

Resolved,—That Mr. Burnham and Dr. Beatty be a Committee to confer with the Manager of the Gas Company in reference to the charge for lighting the building on the evening Exhibitions.

Resolved,—That Mr Barwick, and Hon. Mr. Christie be a Committee to wait upon the Colonel of the Royal Canadian Rifles, and invite the officers and men to visit the Exhibition, and also state that the Board would be pleased to have the band of the Regiment play in the building on the evening Exhibitions.

Resolved,—That the judges shall test such ploughs in the field as they may consider necessary.

Resolved,—That Mr. Barnard's application being the only one before the Board, he be permitted to act as Auctioneer on the ground, if required.

Resolved,—That the Board has no desire to have the bells of St. Paul's Cathedral rung on the exhibition days, and that they do not feel authorized to appropriate any sum of money for that purpose.

Resolved,—That the members of the City Council and of the local Committee have complimentary tickets given them, to admit themselves and families, and that no carriages be admitted except upon the payment of a dollar each, as advertised in the Regulations.

Mr. Denison reported that he had visited Hamilton, along with Colonel Thomson, President of the Board, and had waited upon the members of the City Council, as ordered at last meeting, in reference to the money obtained by the Council of that city from the local Committee of the Hamilton exhibition last year, and now due to the Board, but had not received any satisfactory result from the interview.

Resolved,—That the Secretary make a requisition to the Mayor of the City of London. to place ten policemen at the disposal of the Board, to do duty within the exhibition grounds during the show.

Resolved,—That in view of the pecuniary obligations of this Board, which must be promptly met, no other action than that already determined upon in reference to the local expenditure, can be taken at present.

The Board then adjourned to 9 a. m. tomorrow, at the grounds.

Tuesday morning, Sept. 24.

The Board met at 9 a. m., at the office on the show ground.

Present: Messrs. E. W. Thomson, President, W. Ferguson, A. A. Burnham, Hon. D. Christie, R. L. Denison, J. Barwick, Dr. Beatty.

The minutes of the meeting of last evening having been read, it was moved by Mr. Denison, and seconded by Mr. Christie,

Resolved,—That the action taken by this Board at an emergency meeting held at the Tecumseh House on the evening of the 23rd instant be approved by this the regularly adjourned meeting.

Yeas,—Messrs. Barwick, Burnham, Christie, Denison, Beatty.

Nays—Mr. Ferguson.

The motion was therefore carried.

The President, Col. Thomson, reported upon the building for the Board at Toronto that the tenders exceeded the amount contemplated, and that a conditional arrangement had been agreed upon to be confirmed or negatived by telegraph upon obtaining the decision of the Board.

The Board determined that no alteration should be made in the plans.

The Board then adjourned until 9 a. m. to-morrow.

Wednesday morning, Sept. 25.

The Board met in the office at 10 a. m.

Present: The President, (Col. Thomson,) Hon. D. Christie, Mr. Barwick, Mr. Buckland, Mr. Denison.

The minutes were read and confirmed.

A communication was submitted from Mr.

Glackmeyer, manager of the London City Gas Works, stating that the gas would not be supplied for the evening exhibitions in the Building for less than the amount at which it had been offered in a previous communication.

Ordered,—That the gas be used in the Building as offered by the company.

Ordered,—That the price of admission at the night show this evening be a quarter dollar.

Ordered,—That Mr. Carling, M. P. P. be authorized to make arrangements with the Band of the Royal Canadian Rifles to play at the evening shows, and get bills printed announcing the arrangements, and that the exhibition commence at 8 o'clock, p. m.

The Board then adjourned until 2 p. m.

Two o'clock p. m., 25th.

The Board resumed.

Present: The President, Mr. Alexander, Mr. Ferguson, Professor Buckland, Mr. Burnham, Mr. Barwick, Mr. Denison, Dr. Beatty.

A deputation from the local committee appeared before the Board.

Mr. Carling, on behalf of the said committee, stated that the ground of their complaint is that sundry members of the local committee have become responsible for $3000, and feel aggrieved that the Board by its decision have declined to protect them at present, and, urging the position of affairs on the Board, request that the board will in some manner provide for said amount until it can be realized from the Government.

After some discussion the President informed the deputation that the Board would meet with the local committee, and would with them devise means for satisfactorily arranging the matter so far as they have power.

The Board then adjourned until 9 o'clock to-morrow morning.

Thursday morning, Sept. 26.

The Board met at the office on the grounds at 9 o'clock, a. m.

Present: The President, (Col. Thomson), Mr. Barwick, President of the Association, Hon. Mr. Ruttan, Mr. Denison, Hon. Mr. Christie, Mr. Burnham, Professor Buckland.

Several matters of detail in reference to the awarding of the prizes were brought up and considered, and the Board adjourned till 9 a. m. to-morrow.

Friday morning, Sept. 27.

The Board met at 9 o'clock, a. m.

Present: Col. Thomson, President, Mr. Barwick, Mr. Ruttan, Mr. Denison, Mr. Christie, Mr. Burnham, Mr. Alexander.

Several protests against the awards of prizes having been received and submitted to the Board, it was

Resolved,—That in consequence of there not being sufficient time to consider the several protests laid before the Board, it is ordered that the same be referred to the members of the Board resident at Toronto for adjudication, and that in the meantime the Secretary do withhold the certificate for prizes.

The Board then adjourned to attend the annual meeting of the Directors of the Association.

The Annual Meeting.

The Annual Meeting of the Directors of the Association was held on Friday, Sept. 27th, at 10 o'clock, a, m., in a large tent upon the show ground.

The President, John Barwick, Esq., in the chair.

Members of the Board of Agriculture present: Messrs. E. W. Thomson, H. Ruttan, D. Christie, G. Alexander, R. L. Denison, A. A. Burnham, W. Ferguson.

Members of the Board of Arts and Manufactures:—

Dr. Beatty, J. E. Pell, T. J. Cottle, E. A. McNaughten, W. Wilson, Jno. Watson, W. Edwards.

Delegates from County and Electoral Division Agricultural Societies:—

Brant West,—James Maxwell, I. R. Merritt.
Bruce,—W. Withers.
Durham East,—A. Choate.
Durham West,—M. Jones.
Elgin East,—S. Wade, J. Armstrong.
Elgin West,—H. D. Smith, J. McDougall.
Essex,—Alex. Bartlett.
Hamilton,—H. J. Lawry, J. S. Wetenhall.
Hastings North,—James Archibald.
Hastings South,—William Wood.
Huron,—William Piper.
Kent,—George Young, R. J. Earle.
Leeds South,—Dr. Richmond, Isaac Briggs
Lincoln,—J. C. Rykert, J. A. Nelles.
Middlesex East,—J. B. Askin, Sam Peters.
Niagara,—John Simpson, G. J. Miller.
Norfolk,—D. W. Freeman, Oliver Blake.

Northumberland West,—Henry Battel, Alex. Alcorn.
Ontario North,—Robert Ward.
Ontario South,—John Shier.
Oxford North,—John Dunlop, Wm. Grey
Oxford South,—Wm. Peers.
Peel,—John Tilt, R. A. Hartley.
Perth,—Sheriff Moderwell.
Simcoe North,—W. E. O'Brien.
Simcoe South,—Capt. Tyrwhitt, John Ritchie.
Toronto,—Hon. G. W. Allan, Philip Armstrong.
Victoria,—John Cullis.
Waterloo South,—James Cowan, J. McMillan.
Welland,—John Ker, E Jones.
Wellington South,—Col. Saunders, Wm. Benham.
Wentworth North,—John Weir, Wm. Dickson.
Wentworth South,—J. Rymal, James Calder.
York East,—George Miller.
York West,—Alex. Shaw, Joseph Ross.
Delegates from Horticultural Societies:—
Toronto,—Sheriff Jarvis, James C. Small.
London,—John Carling.
St. Catharines,—W. McGivern, D. Beadle.

SECRETARIES,—Hugh C. Thomson, Secretary of the Board of Agriculture, and Wm. Edwards, Secretary of the Board of Arts and Manufactures

The meeting having been organized, it was moved by Mr. J. Cowan, and seconded by Mr. J. Weir,

That F. W. Stone, Esq., of Guelph, be President of this Association for the ensuing year.—Carried

Moved by Mr. H. Battell, seconded by Mr. J. Carling: That Asa A. Burnham, Esq. of Cobourg, be 1st Vice President.—Carried.

Moved by Mr. W. Ferguson, seconded by Mr. Geo. Miller,

That Dr. Richmond, of Gananoque, be 2nd Vice-President.

Moved by Mr. Carling, seconded by Mr. W. Grey,

That Jas. Johnson, Esq., of London, be 2nd Vice-President.

Moved by Mr. J. Rymal, seconded by Col. Saunders,

That Thos. Stock, Esq., of Waterdown, be 2nd Vice-President.

Moved by Mr. Alex. Shaw, seconded by Mr. P. Armstrong,

That Hon. G. W. Allan, of Toronto, be 2nd Vice-President.

It was then decided that a poll should be taken of the votes for the several persons nominated, when the following result appeared.

For Mr. Johnson,	30	votes.
For Mr. Allan,	15	"
For Mr. Stock,	13	"
For Dr. Richmond,	3	"

Mr. Johnson was then declared to be elected.

It was then moved by Mr. J. S. Wetenhall, and seconded by Mr. Carling,

That R. L. Denison, Esq., be re-elected Treasurer for the ensuing year.—Carried.

Moved by Mr. John Tilt, seconded by Mr. H. Battell,

That the next Provincial Exhibition be held at Toronto.

Moved in amendment by Mr. J. C. Rykert, seconded by Mr. G. J. Miller,

That the next Exhibition of this Association be held at St. Catharines.

On motion the Mayors of St. Catharines and Toronto respectively, were heard in reference to the proposals made by their respective localities.

The Mayor of St. Catharines was authorized to guarantee suitable grounds of not less than 50 acres in extent, and also all necessary and suitable buildings, sheds and offices for the use of the Association.

The Mayor of Toronto stated, that in addion to the buildings and grounds already prepared at Toronto for the use of the Association, the City Council of Toronto had authorised him to guarantee that the sum of six thousand dollars would be granted and expended in improvements to the same.

The motion in favor of holding the Exhibition at Toronto was then put from the chair, and carried.

It was then moved by Mr. O. Blake, seconded by Mr. T. C. Street,

That in the opinion of this meeting, it is of the highest importance to Canada that this Province should be represented at the world's Fair to be held at London in 1862.—Carried.

Moved by Dr. Richmond, seconded by Hon. G. Alexander,

That a copy of the foregoing resolution signed by the President and Secretary, be sent to the Provincial Secretary.—Carried.

Moved by Mr. E. W. Thomson, seconded by Mr. Alexander.

That the Board of Agriculture are hereby

requested to give notice to the several Electoral Division Agricultural Societies to send up each one delegate to attend a meeeting to be held in Toronto the month preceding the meeting of the Legislature, for the purpose of agreeing upon, and recommending, such alterations as they may deem necessary in the Agricultural Statute,and that the Board of Arts and Manufacture, and the Horticultural Societies be invited to attend, and in order more fully to carry out the spirit of the foregoing resolution a synopsis of the Bill introduced at the last meeting of the Legislature be published, and a copy thereof sent to each County and Electoral Division Society, in order that the delegates may have a thorough knowedge of the subject under discussion, and that the travelling expenses of such delegates be paid out of the general funds of the Association, and that the President of the Board of Agriculture be authorized to name the day and place of meeting by circular.—Carried.

Moved by Mr. R. L. Denison, seconded by Mr. W. Ferguson,

That the thanks of this meeting be tendered to John Barwick, Esq., for his very energetic and valuable services during the past year as President of this Association.—Carried.

Moved by Mr. A. A. Burnham, seconded by Dr. Beatty,

That the thanks of this meeting be given to Mr. Johnson and the members of the Local Committee for their efficient services in providing the excellent accommodation for the present show.—Carried.

The meeting then adjourned.

Annual Address

DELIEVERED BY THE PRESIDENT OF THE PROVINCIAL AGRICULTURAL ASSOCIATION, JOHN BARWICK, ESQ., AT LONDON, SEPTEMBER 27, 1861.

Gentlemen of the Provincial Agricultural Association:

In accordance with the usual custom adopted by the former Presidents of the Association, I now proceed to address you.

The gentlemen who have heretofore so ably filled the Presidency, have so well treated the different subjects that come within the scope of an address, that little is left for me to allude to, but what is trite to my brother Farmers. A slight retrospect, however, of the benefits conferred on the farmers of Canada by this Association, may not be deemed out of place upon the present occasion.

The agricultural Association of Upper Canada, which was organized in 1846, has steadily advanced in prosperity and usefulness. In that year the sum of £220 only was awarded in Premiums—at the last Exhibition the Premiums had been increased to no less a sum than £3,750.

The success that has attended the Association is not to be measured solely by the distribution annually of a large sum in premiums. The Association has been instrumental, in connection with the board of Agriculture, in collecting and circulating a mass of thorough, practical, and valuable information, which now appears in "The Transactions of the Board of Agriculture of Upper Canada," comprising three volumes, and in inducing a zealous competition from all parts of the Province, and from some of the neighboring States, whereby the most improved machinery and labor-saving implements, and all descriptions of stock, which are not to be surpassed on this continent, are made available to the Canadian Farmer.

The system of holding the Exhibitions in different parts of the Province, periodically, brings the many and varied improvements in stock, machinery and mannfactures, under the notice of all the inhabitants of the various districts of the Province.

At a recent meeting of the Board of Agriculture, it was decided to erect an Agricultural Museum in Toronto. The building is to be proceeded with at once, and will be completed in the early part of next year. The Agriculturist will then have a repository where samples of the various products of our country can at all times be viewed—an object of interest and importance, not only to the Canadian Farmer, but to foreigners and intending settlers.

The office of the Board of Agriculture is to be placed in the building, and a portion of it is to be occupied by Mr. James Fleming, the enterprising and reliable seedsman of the Association.

His Royal Highness the Prince of Wales, while he attended the Exhibition of last year, expressed himself highly gratified with the progress of the Association, and with the display of Canadian products on that occasion, and marked his approval of the organization of the Association, by becoming a

member and contributing £200 to its fund, which sum has been invested, and the interest of it will be annually offered as "The Prince of Wales' Prize."

The products, manufactures, agricultural implements and machinery of Canada, have now attained an excellence, which has stood the test of a competition in the Mother Country, and at the same time has given Canada a prominent position as a Colony, which must be gratifying to every Canadian. The Association has exercised a strong influence in aiding this success and prominence.

It is much to be regretted that no provision has been made for the representation of Canada at the World's Exhibition of 1862, to be held in London. An earnest appeal should immediately be made to the Government. The advantageous position occupied by Canada at the former Exhibitions of 1851 and 1855, advanced her reputation and interests. The Provinces of New Brunswick and Nova Scotia, and even the Islands of Prince Edward and Vancouver, have taken the requisite steps to be represented; surely Canada will not be less emulous.

In addition to our Agricultural products, and the valuable timber in our forests, our mineral resources will eventually become a great source of wealth to Canada.

Mr. Dufrenoy, member of the Institute of France, and Inspector General of Mines in that country, thus alluded to the collection of minerals at the Great Exhibition of 1851, made by our talented Provincial Geologist, Sir William Logan :—

"Of all the British Colonies, Canada is that whose Exhibition is the most interesting and the most complete, and one may even say that it is superior so far as the Mineral kingdom is concerned, to all countries that have forwarded their products to the Exhibition. This arises from the fact that the collection has been made in a systematic manner, and it results that the study of it furnishes the means of appreciating at once, the geological structure and mineral resources of Canada."

A very excellent suggestion was made in the September number of "The Journal of the Board of Arts and Manufactures for Upper Canada,"—"That a museum of natural products, both mineral, vegetable, and even animal, might rapidly be formed at each permanent Exhibition Building.

It has been stated that it should be the object of every farmer to endeavour to produce "two blades of grass where only one grew before." We fear that in many instances our system of farming in Canada has been the reverse of this. We have cropped our land under the supposition that its fertility and productiveness were inexhaustible.

We have felt the injury to our wheat crops by that little enemy, the "midge," to be a great disappointment and loss; but that injury will prove eventually a blessing by compelling us to improve the system of farming, and by adopting the "mixed husbandry" which has proved so advantageous and profitable in the Mother Country. The breeding of Horses, Cattle, Sheep and Pigs, (for which there is such a demand from the neighbouring States) and the fattening of stock on green crops, will rapidly renovate our overworked lands.

The Agricultural Census recently taken, will record the change of system which the Canadian farmer is now adopting,—fields containing many acres of green crops are seen growing on each farm, where, a few years ago, the cultivation was limited to small "patches," and in many instances 900 bushels of turnips per acre are now produced.

And it is noticeable throughout many parts of the country that the Canadian Farmer is adopting under-draining—the making of drain tiles has now become a source of constant and profitable employment in the localities where the tiles are made—the perfect draining of the land will ensure a tenfold return, with the early maturity of the crops, lessening the danger of attacks of rust and other injuries to which the farmer's hopes are subject.

Great improvements have been recently made in many parts of the country in the construction of Barns and Farm Buildings, for the housing and feeding of stock and securing root crops; many of these are models of good arrangement, and are constructed in the most substantial manner at a cost, in many instances, which would have been considered a few years ago, when the cultivation of fall wheat engrossed the attention of the Canadian Farmer, as too large an expenditure for such objects.

That thorough practical Farmer, the Honourable Adam Fergusson, at the time of the organization of the Agricultural Association and Board of Agriculture, (and who may be considered one of the founders of this Ca-

nadian Institution) zealously advocated the establishment of a Veterinary College. It will be gratifying to that venerable gentleman that his suggestion is now likely to be carried out—competent veterinary advice will prove highly advantageous to the breeders and owners of stock. It is no exaggeration to state that many thousand pounds' worth of stock is annually destroyed in Canada through the pretended skill of those whose aid is sought to alleviate the sufferings of our domestic animals.

The limits of an address will not permit me, nor would it be acceptable to you that I should weary you by entering into details as to the cultivation of our crops, or the breeding and management of the different kinds of stock. The excellent display of this week by the various Exhibitors is palpable evidence of the success of their efforts in the cultivation of their crops, and in the improvement of their stock; but I may be permitted to epitomize the subject by remarking that the thorough draining, cultivation, (with deep ploughing) and manuring of our fields, with a proper rotation of crops—the sowing of the best and cleanest seed, and at (what our experience teaches us to be) seasonable times—the selection of the best and hardiest descriptions of stock of a medium size, and with God's blessings on our labors, the Farmer's occupation will be found a profitable and improving one.

A system of rigid economy is an important feature in the successful management of the Farm, and if duly carried out will secure lasting benefits to the country.

The year 1860 will be noted as an epoch in Canadian History as being the first year during which our Exports exceeded our Imports.

The following table of importations and exportations from 1851 to 1860, inclusive, will prove interesting:

	IMPORTATIONS.	EXPORTATIONS.
1851	$21,434,790	$13,810,604
1852	20,286,492	15,307,607
1853	31,981,436	23,801,303
1854	40,529,325	23,019,190
1855	36,086,160	28,188,460
1856	43,584,387	32,047,017
1857	39,428,584	27,006,624
1858	29,978,527	23,472,609
1859	33,555,161	27,766,981
1860	34,441,621	34,631,890

Our aim should be to foster Canadian Manufactures, of those articles that we can advantageously manufacture. Every Canadian will concede that it is of great importance that our Towns should be occupied by thriving Mechanics and manufacturers, thereby giving to us a home market. How many of the youthful population of our Towns and Villages might be advantageously and economically employed in woollen and cotton factories who are now in too many instances a burthen on their parents, and at the same time it is to be feared are in a course of training to become vicious members of society.

The crop of wool for this year has been principally purchased for exportation to Great Britain—heretofore it has been exported to the United States to be there manufactured.

An important communication was transmitted by the Duke of Newcastle to His Excellency the Governor General, being the "Address of the Wool-supply Association of the Bradford and Halifax Chamber of Commerce." This correspondence and address will be found in the July number of the *Canadian Agriculturist*, and well deserves the careful perusal and consideration of the breeders of sheep.

Flax and Hemp are certain and very productive crops in Canada, and might be advantageously grown for manufacturing purposes.

The occasion is a suitable one to bring under the notice of our farmers the aid rendered to the agricultuaal interests by "our organ," the *Canadian Agriculturist.* This Journal is edited in a very able manner, the usefulness of which might be very much increased were our practical farmers to furnish papers on the culture of the splendid specimens of their products which have been exhibited at this show. If each would determine to contribute periodically a concise paper on the cultivation or management of what he gives his chief attention to, many and valuable hints would be thereby imparted.

Our Legislature has done much to attract emigration to Canada, by making known her immense resources, but much remains to be done. Canada offer a more favorable field and greater inducements to the emigrant than any other colony of Great Britain—her easy accessability, her great inland water communication, which is unsurpassed in the world, and her net-work of Railways, give

ready access to the millions of acres of productive soil which are available on favorable conditions for settlement.

The able and scientific men who have lately explored British territory between us and the Pacific, have reported favorably on the agricultural capabilities of that region, and also of the existence of coal-beds, and the feasibility of constructing a line of railway to the Pacific. Should their anticipations be correct, Canada must be enriched by being made the highway for the traffic of that immense territory.

The large fleet of shipping, both steam and sailing vessels, which are attracted to the St. Lawrence, must benefit the farmer by cheapening the transportation of our products.

The recent arrival of the *Great Eastern* steamer, (the largest vessel in the world,) at the port of Quebec, demonstrates the advantages of that noble river, the great natural outlet from the far west.

During the present and past year several lake crafts, of Canadian build, have successfully navigated the Atlantic, carrying full cargoes direct from our lake ports to Liverpool, and returning with large cargoes. Our enterprising neighbors in the Western States are also extensively engaged in the same commerce.

The climate of Canada is a healthy one; the following table gives the rate of mortality in various contries:—

COUNTRY.	MORTALITY.
Russia.	one in 26.68 per annum.
Austria	" 30.43 " "
Prussia	" 35.47 " "
Europe, mean of 17 States.	" 37.93 " "
France	" 40.92 " "
Sweden	" 43.49 " "
Switzerland	" 44.43 " "
England	" 46.14 " "
Norway	" 51.25 " "
Upper Canada	" 102.00 " "

The system of Common School education in Canada is placed within the reach of the most humble—and there is no bar to their advancement,—the most eminent in the various professions in Canada have placed themselves in that position by their abilities and perseverance only,—and when the youth of Canada have gone to the mother country to complete their studies for the various professions, they have acquired prominent positions not only in their examinations, but subsequently in their professions. It is worthy of note that the "Victoria Cross" has been bestowed on several Canadians, for acts of bravery in India and other parts of the world.

As a colony of Great Britain, we enjoy the protection of that powerful Empire, while at the same time we have the entire control of our local affairs. May it be the aim of Canada to follow in the footsteps of Britain, whose Christian course has placed her in the van of nations!

JOHN BARWICK,
PRESIDENT.

Meeting of the Board of Agriculture.

LONDON, Friday Sept. 20, 1861.

The Board met this evening at 8 o'clock in the Mayor's Room, in the City Hall, London.

Present: The President, Messrs. Alexander, Christie, Burnham, Ruttan Ferguson, Barwick, Beatty, and Pell.

The President submitted a resolution adopted at a meeting of the Local Committee just held, and also a proposal of the Mayor of the City of London to execute an agreement securing the use of the exhibition buildings at London to the Association in future, in consideration of the Board advancing the Local Committee a sum of money to relieve them from their liabilities incurred in the erection of buildings for the exhibition, of which documents the following are copies:—

(No. 1.)

"Moved by Mr. D. Glass, seconded by Mr. J. Gardner, and Resolved,—That in view of the deficiency now remaining due to the contractor, Mr. Alex. Campbell, of about $3,500, this committee pledges itself to give the Board of Agriculture, through the corporation of the City of London, a lien upon the Agricultural grounds and buildings in London, as a security, if the said Board of Agriculture will now advance the said amount to pay the contractor as aforesaid, it being understood that the pressing demands of the contractor be forthwith complied with, and that the lien by way of bond or mortgage be given with as little delay as possible, and that the committee will rel x th ir exertions to obtain the money from other sources to pay off the said amount so advanced by the Board of Agriculture."

(No. 2.)

"On behalf of the Corporation of London I propose to execute an agreement similar to the one already executed with the County of Middlesex, guaranteeing to the Association the right of occupation to the Exhibition grounds

Signed, { Francis Cornish, Mayor."

Sept. 27th, 1861.

Whereupon it was resolved:—

That as soon as a legal document is executed by the Mayor of the City of London, giving to the Council of the Provincial Agricultural Association a lien upon the property known as the exhibition grounds similar to that given to the County of Middlesex, and shall insure the buildings thereupon in the sum of four thousand dollars for the benefit of the said Provincial Agricultural Association, then the Treasurer is authorized to pay to the Treasurer of the Local Committee of London, the sum of three thousand five hundred dollars, for the purpose of settling with the contractor for the buildings recently erected upon said exhibition ground.

The Board then adjourned.

THE

JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES,

FOR UPPER CANADA,

Is Published on the first of every Month,

AT $1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. Chewett & Co., King Street East, Toronto.

FOR SALE.

A LOT of thorough bred Essex Pigs,—bred from recently imported 1st prize animals, and who have this season taken premiums at both Township, County, and Provincial Exhibition.

James Cowan.

Clochmhor, Galt P. O., Oct. 19, 1861.

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FOR SALE.

A FEW PURE-BRED SOUTH-DOWN RAMS and Ewe Lambs, from

IMPORTED STOCK,

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

John Spencer,
Brooklin, Post Office,
Oct. 12th, 1861. Ontario County C. W.

The Agriculturist,

Or Journal and Transactions of the Board of Agriculture of Upper Canada,

IS published in Toronto on the 1st and 16th of each month.

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, NOVEMBER 1, 1861. No. 21.

Clover and Turnip Sickness.

In the older countries of Europe where clover and turnips have been cultivated as farm crops for a great many years signs of decay have recently been manifested. Even the Swedish turnip,—the hardiest variety of that useful root,—has in several parts of England shown of late years unmistaken symptoms of deterioration. Clover too, when brought round in a fourth course of rotation, or the much vaunted system of Norfolk husbandry, has been for many years becoming more and more precarious. Indeed for rendering this important crop more certain and remunerative it has been found necessary to bring it round in the rotation less frequently, and to dress it with manures more specially adapted to its wants; and experience of late years points out a similar way of treating the turnip. We are not aware that similar results,—even in an inferior degree, have as yet taken place in Canada; these crops have not been long enough and so extensively cultivated by us as yet to produce any very obvious effects of this nature, although by persisting in a system of inferior cultivation, especially when the same crop is frequently grown on the same land, a like deterioration will doubtless be experienced. Timely warning therefore becomes necessary.

It is well worth being kept steadily in mind that sickness in clover, and finger-and-toe in turnips, are most common on inferior soils,—such kinds, indeed, as grow a poor quality of roots and grasses, which is clearly to be attributed to the want of earthy matter with in reach of the absortive powers of the roots. It has lately been suggested that the roots of plants have to select as well as dissolve a large portion of their earthy food. These functions can only be performed when the condition of the vegetable matter within the soil is fitted to maintain the roots in healthy activity. When the supplly of earthy food is insufficient, we can easily imagine, from analogous facts, that the juices as well as structure of the plants are not in a healthy state. Under these circumstances insects and mildew appear, and the plants die of diseases having special forms and characters.

The want of a full supply of inorganic food within the turnip plant we consider as the cause of finger-and-toe. The particular insect which lays its eggs in the root, and gives the disease its form, through the infusion of poisonous fluids introduced into the sap of the plant, only does so when the plant is in an unsound state. It may look vigorous enough to the eye, while something is wrong within, which the insect can so nicely distinguish. It is of great importance towards attaining a knowledge of the exact nature of this and other diseases of plants, to bear this fact in mind. Mr. Duncan in a late number of the *Transactions of the Highland Society*, has given an admirable description of the fly which produces the swellings on the roots of the turnips attacked by the finger-and-toe. The progress of the disease is also most lucidly traced.

We quite agree with him that the "salivary discharge which accompanies the act of manducation" may be sufficient to produce the morbid growth, and laterly destroy the turnip. In fact the discharges by the insect have an effect by no means dissimilar on the turnip roots to that the sting of a bee or bite of a snake has on the animal system. The innoculation of the poisonous matter first produces swellings, which afterwards undergo further corruption and decay. The only practicable way that appears at present of remedying or rather preventing these maladies is the thorough cultivation of the soil and the proper application of suitable manures; and to allow the same crop to occur on the same land only at sufficiently long intervals. The careful selection of *pure and healthy seed* is alone of indispensible importance. Indeed it is to a want of attention to this indispensible condition that much of the failure in all farm crops is to be attributed. Impure or inferior seed of any description of crop would be dear a

Management of Pigs when Fattening.

This should be commenced or preceded by a moderately good feeding, so as to get the pig in good store condition. To give a *poor* pig strong fattening food must, for a time, be attended by loss. The system is unaccustomed to rich food, and cannot appropriate it, because it has no fat cells ready to receive it. These would be produced by food of moderately good quality, after which the pig might have stronger food, and would be able to make good use of it. When meal is given to pigs for the purpose of fattening them, its *liberal* use is most economical. It should be supplied three times daily at *regular* intervals, and should be given as a thick paste. The feeder should give them as much, at each meal, as they will eat, and, should any remain in the trough, it should be shut off from the pigs by a movable flap, in which case they receive it with their next meal;—but the careful feeder will soon know what they can manage to consume, and regulate the quantity accordingly.

Afer feeding pigs they should be kept as quiet as possible, for the more they sleep the more progress they will make. It is a sure sign that they are not paying when fattening pigs are seen uneasy and wandering about the sty;—the sooner they are made lazy, the sooner they begin to pay. Our improved breeds have a great aptitude for fattening, but this tendency is regulated by the same principles that operate in all other stock. The Suffolk and improved Berkshire may now be considered among the most popular breeds in Canada as well as in Britain, coming early to maturity, and possessing great fattening properties. It should always be borne in mind in the management of swine that warmth, cleanliness, and regular feeding are, under all circumstances, essential to profitable success.

Canadian Flour.

[We insert from the *Globe* the following communication on the importance of giving greater encouragement to Flour at our Provincial Exhibitions, and recommend the suggestions it contains to the consideration of the Board of Agriculture.—Ed.]

Sir,—Canada West, by reason of its situation, its agricultural products, and its extensive water power, seems to be peculiarly adapted to the operations of the merchant miller. From this country communications by water and railway are such, that our productions can with ease be transported to any other part of the world in search of remunerative markets. Wheat, our principal crop, is easily raised, and is of acknowledged good quality; while the water-power is not only beyond calculation in amount, but is dispersed over the entire surface in such a manner as to give to the remotest corners their "mill privileges."

Against this array of circumstances in the miller's favour, there exist certain disadvantages which in various ways have hitherto been the means of rendering their business very precarious and in the main unremunerative. The Reciprocity Treaty, which put competence aud independence within the reach of every good farmer in the country, altered the position of the miller incalculably for the worse. Again, the building of railways through the interior has so raised the value of wheat in remote districts, that in various localities some mill properties have in consequence become almost valueless.

But while the miller suffers from a course of public events that can not by any means by altered, he may in most instances improve his own plans and method of manufacture so as to make a profitable use of his still numerous advantages.

It is of immense importance that so prominent a branch of Canadian manufactures as that of flouring should received the attention

from the proper quarters that it deserves,—we ought, I think, to look to our Provincial Exhibition as a medium through which a gradual but thorough change may be effected, and ultimately place the milling interest in a far better postion than it now generally occupies. At present while the money permanently invested in mill property may be counted by millions, adding immense sums needful for carrying on the business, the manufacture of flour is recognized as an industrial art annually, by the awarding of two or three prizes of from three to ten dollars each.

The main object to be attained by good milling is to get the best possible quality of flour out of the least possible quantity of wheat. A few possess the knowledge thus requisite to make milling profitable, but a large proportion of those engaged in this business seem to be working in the dark, make an inferior article, lose their money, and bring discredit upon our products abroad. The Provincial Agricultural Association has hitherto done nothing to counteract this. The premiums, insignificant as they are, are not within the reach of our best brands made for consumption, but to attain them a couple of barrels are got up at considerable expense, made from the choicest winter wheat, and of a quality made finer than is known in commerce, which is of no practical use to the baker. As the bulk of our exports across the Atlantic are spring wheat flours, this system does not touch the evils complained of.

If liberal prizes were offered competition would ensue, experiences would be interchanged, knowledge would spread, the tyranny exercised by what are known as "boss millers" would give way, and the proprietors would find that milling is not the mysterious art that we are required to believe it by those gentlemen who, after going through a seven years' apprenticeship in England, to very little useful purpose so far as Canada is concerned, come out to this country to enjoy a salary of forty or fifty dollars a month.

In discussing this subject, let the gentlemen of the Provincial Association remember they are dealing with the most important branch of manufactures the Upper Province possesses. The various grades of flour, each useful for its own particular purpose, are regulated by Act of Parliament; excellence in each grade should be sought for, and prizes should be given to secure this. The following premiums may at first sight appear large, but they are not in reality so, considering the magnitude of the changes that might be effected through their instrumentality. I would propose a scale something as follows:—

$400 to the maker of the best 100 barrels of superfine.

$400 for the best 100 barrels of fancy.
$200 " 100 " of extra.
$200 " 100 " superior extra.

The flour to be stored in the public warehouse; the inspector to examine all and mark the grades, placing in the exhibition building four or five barrels from each lot as its representative. Superiority to consist primarily in the excellence of the flour itself for using and keeping qualities; also in the goodness of the packages, their weight and capability for withstanding rough handling and long carriage, and the neatness and fitness of the brand.

As the next Exhibition will be held in Toronto, a favorable opportunity will then be presented to give this plan a trial without putting to inconvenience the miller and shipper. A powerful incentive to some movement of this kind exists in the enormous loss sustained during the late summer of 1861 in Canadian superfines heating and souring on the voyage to England, by which it is supposed that fully two-thirds became unfit for human food. The consequent loss, although falling upon individuals in the first instance, was sufficiently large to affect the country generally, by sensibly diminishing the value of its exports.

The writer has at different times brought this matter in an informal manner before some members of the executive of the Association, and he has reason to think that united action on the part of the millers would cause the adoption, not perhaps of this individual plan with all its details, but of some one equally well, or perhaps better, suited to the end desired.

Your obedient servant.

F. A. WHITNEY.

Toronto, October 30, 1861.

The Provincial Exhibition.

From the Journal of the Board of Arts and Manufactuaes for U. C.

(Continued from page 615.)

The fourteenth Exhibition was held at Kingston in the Building already described. The prize list amounted to $10,513; the entries to 4,830, being more than one thousand short of the number of entries at Toronto the previous year. Nevertheless the display was regarded as satisfactory, particularly with respect to live stock and agricultural products. Besides the customary annual address of the President, lectures were delivered by Dr. Lawson, Professor of Chemistry and Natural History in the University of Queen's College, and by the Rev. Hannibal Mulkins, on Scientific Agriculture.

It has been remarked, in a preceeding paragraph, that the Association began its existenre in 1846, wholly without funds. In 1860, the auditors certified that they had examined the accounts, and found that the sum of one hundred and ten thousand nine hundred and eight dollars had been received by the indefatigible Treasurer, R. L. Denison, Esq., and that there remained a balance in his hands of eight thousand and twenty-eight dollars on the 20th Sept., 1859. What further illustration of the pecu-

inary prosperity of the Association is necessary?

Ten years ago the fourth Exhibition was held in Kingston. Compare the fourth with the fourteenth Exhibition, and see the progress of the country reflected in the results.

Comparative Table showing the general results of the Exhibittons of 1849, *and* 1859.

	No. of Entries, 1849.	No. of Entries, 1859.
Blood Horses	16	9
Agricultural Horses	97	235
Heavy Draught Horses	..	34
Durham Cattle	54	68
Devon "	10	62
Hereford "	..	7
Ayrshire "	12	62
Galloway "	..	29
Grade "	51	38
Fat and Working Cattle	20	21
Leicester Sheep	79	90
Cotswold Sheep	..	29
Cheviot Sheep	..	12
Long-wooled Sheep	..	55
Southdown Sheep	16	53
Merino and Saxon Sheep	11	17
Fat Sheep	5	9
Yorkshire Pigs	59	11
Large Berkshire Pigs		2
Other large breed Pigs		9
Suffolk Pigs		23
Improved Berkshire Pigs		12
Other small breed Pigs		30
Poultry	22	179
Foreign Stock	39	22
Foreign Implements		2
Grain, Seeds, &c.	224	609
Roots and other Field Crops		368
Fruit		252
Garden Vegetables		349
Plants and Flowers		123
Dairy Products, Honey, &c.	63	156
Agricultural Implements—Power	101	141
Agricultural Implements—Hand		67
Cattle Food—Manures		9
Cabinet-ware	18	85
Carriages and Sleighs	40	54
Leather Manufactures		133
Fine Arts	78	165
Groceries and Provisions	..	185
Hats, Furs, &c.	..	46
Indian work	3	104
Ladies' Work	165	318
Machinery, Metal Manufactures, &c.	29	183
Miscellaneous	..	84
Musical Instruments	..	11
Pottery, Building Stones, &c	3	16
Paper, Printing, Book-binding, &c	7	17
Woolen Flax & Cotton Goods	99	170
Foreign Manufactures	..	20

Hamilton had the honor of being the scene of the Fifteenth Exhibition of the Association, one memorable from the circumstances that it was visited by his Royal Highness the Prince of Wales. There is probably no site in the Province finer than that chosen for the Hamilton "Crystal Palace." The building is of wood and glass, upon a permanent foundation. The entire area of the building is about 36,000 feet, the ground plan being octagonal in form, having four trancepts. The building is two stories in height; the first story 16 feet in the clear, and the second 15 feet to the line of the eaves, with an arched roof of light appearance. At the intersection of the cross is an octagonal space 76 feet in diameter, and 54 feet to the line of the roof, this portion is also arched in a most substantial manner; the roof surmounted with a cupola. The extreme height from the ground floor to the top of the dome is 100 feet, which is surmounted by a flag-staff 25 feet in height. The length of the building is 171 feet by 71 in width, and contains about 24,000 feet on the ground floor. There are four galleries, 54 feet wide by about 64 feet long, with a corridor running round the centre octagon, connecting all the galleries; these galleries contain about 12,000 square feet; four spacious stairways lead from the ground floor to the galleries. The diagonals which form the octagon are only carried up one story, with flat tin roofs—access to which can be obtained from the galleries—affording a fine place for a promenade, and a beautiful view of the city and bay. One of the galleries is reserved especially for the exhibition of the fine arts—three of its sides are close boarded, and the light admitted through the centre of the roof by a lantern-light extending the whole length, the glass is frosted, or obscured in order to diffuse a mellow light. The whole of the glass throughout the building is frosted.

All the windows have semi-circular heads, with cut trusses under the same. The whole of the wood-work, in the exterior as well as interior, is planed or wrought, together with the cornices; these cornices are supported at intervals with fine cut brackets. The building is painted outside with a warm light color, or stone tint, in oil, and it is intended to paint the interior in fresco. The dome, covered with tin, renders the building picturesque, and enables it to be seen a distance of several miles around. The gallery floor is dressed and laid open, and the under side of the galleries lined with dressed boarding, to prevent the dust rising. The cost of the building was about $14,000.

In the address of the agriculturists, artisans, and manufacturers of Upper Canada to his Royal Highness, it was stated, that "This is the "Fifteenth Exhibition of the Agricultural Association of Upper Canada, and we think it demonstrates to those who have witnessed the successive exhibitions from year to year, that they have been successful in stimulating the in-

dustrial classes in the improvement of all those productions upon which the property of Her Majesty's dominions so mainly depends." His Royal Highness in his reply said, "Blessed with a soil of very remarkable fertility, and a hardy race of industrious and enterprising men, this district must rapidly assume a most important position in the markets of the world."

Of this exhibition an able reporter states,* "The Exhibition of the Agricultural Association of Upper Canada, which has just been brought to a close, will long be regarded as a most brilliant epoch in the records of the Society. Closely connected with the visit of the illustrious personage, who made it the scene of his last public appearance in this part of the dominions of his Royal Mother, it possesses an historical interest which time will not readily efface, while as a memorial of the progress which we have made in those branches of industry most essential to our prosperity, it far outshines all that have preceded it."

We come now to the Sixteenth Annual Exhibition of the Association, that of the present year, when we enjoyed the opportunity of witnessing one of the most complete and successful displays which has yet taken place. In the ordinary course of events in Canada we naturally look for general progress in the staple industries of the country, notwithstanding years of depression and stagnation. One advantage of the periodical return to stated districts for the purposes of the Provincial Exhibition is the evident facility offered for making comparisons between the past and present, and estimating the amount of progress made in different departments near the scene where so much friendly rivalry and competition take place. It is not only reasonable to suppose, but it is a supposition well borne out by fact, that the merits of such exhibitions depend to a great extent upon the locality where they may be held. Proximity to the arena where competition takes place induces many to enter the lists who would be otherwise mere spectators of the rivalry of others. London is situated in the centre of one of the finest agricultural districts in the Province, and the expectation that all departments of husbandry would be fully represented, was more than realised.

The same object strikes different observers in many diverse ways. At the late London exhibition one fact could scarcely fail to arrest the attention of any visitor not wholly intent upon special subjects, but free to admire, or condemn, according to his unbiassed opinion.

While examining the workmanship we were unmindful of the workman. It was a rare sight to witness so vast an assemblage and look in vain among them for a single object seeking compassion or indicating poverty and distress. Within the limits of the exhibition, such would necessarily be vain on account of the admission fee, but outside the gates where a large crowd remained during the days when the exhibition was open, not only was there an absence of any approach to mendicancy, but the appearance of the individuals composing the crowd indicated perfect freedom from privation or indigence.—Not less surprising was the appearance of visitors of all classes and grades, but especially of those who are the bone and sinew of the country.—Thousands of strong and healthy looking men, the majority above the average height, spoke a language by their looks not to be misunderstood and far better than words, described the country of their birth or adoption. Another marked feature of the present exhibition was its truly Canadian character, owing no doubt to the troubles in which the United States are involved, our friends across the border were not present with their usual strength, and though we may regret the cause, yet it shows us that we are now fully able to organize and carry out an unusually successful exhibition among ourselves, without even missing extraneous aid.

We do not propose to enter into a minute description of the London exhibition, nor indeed is such the province of this journal, but in a succeeding number we shall be able to describe and comment upon such articles in the department of Arts and Manufactures as may appear deserving of special notice. For the present it will be sufficient to give a general sketch, the particulars being so fully and truthfully furnished by the daily papers of London, Toronto and elsewhere, and already no doubt familiar to the readers of this journal.

The building erected by the local committee was described in the last number, but for the sake of uniformity a brief notice is again given.

The exhibition building is erected in the vicinity of the Barracks, and within half a mile of the centre of the city, on a beautiful piece of ground of about twenty-six acres, a portion of which has been purchased from the Government by the Corporation for this purpose.

The ground plan of the building is a regular octagon, its dimensions from opposite angles, being 186 feet. The space offered by the ground area is upwards of 24,000 feet, while the galleries give an additional space of 4,000 feet more. The external wall is built of white brick, on a foundation rubble masonry and concrete, and is twenty-one feet in height. The entrance is through eight door-ways, each eight feet wide and fourteen feet high, one at each angle. In the brick wall, on each side of the octagon and between the door ways, are five spacious windows, making on the ground floor forty windows. The roof of this portion of the structure is covered with felting, gravel, &c. The second tier of the building, containing the gallery, rises to the height of thirty-two feet above the ground line, and is 114 feet in diameter from opposite angels, giving a wall accommodation of more than 300 feet, lighted with forty-eight windows, every alternate one being hung on a pivot to

admit of ventilation. The ascent and descent to the upper portion of the building is provided for by two stairways, one being intended for the entrance and the other for the exit of the public, and leading in opposite directions so as to divide the crowd. The third tier of the building is a continuation of the inside gallery wall, and runs to the height of forty feet above the ground line. This tier supports the cupola, and is covered with a shingle roof. The interior view is clear, and not interrupted by any timber to the height of eighty-seven feet. The full height of the building to the top of the flagstaff, is 114 feet; the dimensions of the cupola, twenty feet diameter by thirty-one in height; area of the ground floor and gallery 28,000 feet, being about the same area as the Hamilton Exhibition building, and 4,000 feet less than the Toronto building. The sheeting of the roof is printed a blue calor, the timber a drab.

In expressing an opinion upon the manner in which the building served the purposes for which the building was designed, we desire to avoid the appearance af criticising without suggesting beneficial alteration which would not be attended by much additional expense. First impressions are always most lasting, and when one enters a building crowded with objects of industry and art with a view to study or enjoy or enjoy them, it is next to impossible to avoid being impressed more or less by the appearance of thy structure in which they are displayed.—The feeling produced on first entering the London Exhibition building is not a happy one. The gallery seems to drop like anopaque, dull, and heavy screen before the spectator, at once creating disappointment and a disposition to be adversely critical. The massive supports in front of each doorway, obstructing the view across the building, increases the dissatisfaction, and the cold drab colouring of the plain undecorated timbers bring no relief to the eye, but rather confirms impressions just created. Red, white, and blue are the natural colors for such a building, and there does not appear to be any valid reason why the gallery, which is painfully visible on entering, should not have been glazed and made instrumental in lighting the lower floor, and if not ornamental at least not an eyesore. Means, easily contrived, might with great advantage have been adopted for displaying a considerable part of the great variety of useful and ornamental ladies' work above the gallery, where close inspection is not necessary, general effect being the object aimed at.

Passing now to the objects exhibited in the building, we are at once struck with the number of competing sewing machines; it is not a little remarkable that this invention should have taken such wide-spread root throughout the United States and Canada, and, although only a few years old, has already reached such excellence in results. Some of these machines are very ingeniously contrived, and leave little to be wished for as household labor-saving machines. The furniture was substantial and good, but not particularly distinguished for beauty of design, although the materials are excellent and the workmanship superior. A reference to the illustrated catalogue of the Great Exhibition at London would speedily develope a more elegant description of drawing room furniture. The skill to construct is very evident, but taste to arrange is susceptible of improvement. It is very satisfactory to be able to note the taste for music, and the means of cultivating that delightful art, which appear to grow together in Canada. Piano-fortes of Canadian manufacture were very well represented, a fact which of itself speaks well for the progress of our civilization. The collection of pipes and tiles for draining is another suggestive feature, and shows how the true principles of agriculture are spreading throughout the country. The specimens of pottery and earthenware were good, but this art is as yet in its infancy in Canada, owing to the remarable cheapness of the imported articles. There was nothing that may be called new in stoves, fire-grates, or apparatus for warming houses. In this climate one would naturally look for various designs for economising fuel and distributing a uniform temperature throughout our dwellings. The German tile stove, in its present elegant forms and excellent adaptations, does not appear to have attracted the attention of Canadian manufactures. The manufactures in leather were good and created a favourable impression, they included carriage and team harness, saddles, whips, belt leather, patent leather, leather, in a word, in all its forms and many of its adaptations. But we were disappointed with the small display of manufactures in wool, flax, and cotton. We observed only cloth, winter and summer tweeds, blankets, carpets and couterpanes, woollen garments, flannel kerseys, woollen shawls, shirts, stockings, socks, and an assortment of cordage and twine. Many well known names were not among the exhibitors. Our flax and cotton manufactures had no representation; we know they exist now, but why were they not sent to our Provincial Exhibition?

The di play of fruit, considering the season, was magnificent. The flowers were indifferent, but the vegetables were good and showed both improvement and skill. In horticulture immense strides have made of late years in Canada.

The agricultural implements were very numerous and most of them of Canadian manufacture. Ploughs of many varieties, from the simple wooden implement adapted to the bush, to the drain plough for skiiful and scientific husbandry. Subsoil, draining, and double mould ploughs are indicative of progress; where these implements are common, agriculture is in an advanced state. Mowing, reaping and other machines of this class were not so fully represented as

might have been expected, but they are generally very ponderous and expensive to transport to great distances. Of cultivators the variety was also not in excess of former exhibitions. One important machine deserved particular notice as indicating progress. An improved liquid manure drill for drilling two or more rows of liquid with turnips, mangels, carrots, &c., either on the ridge or flat.. The use of liquid manures is of the utmost importance, and a machine to distribute them economically and uniformly is a great desidera tum. The stump extractors were heavy cumbrous machines, wholly inapplicable for general use, especially when a stump extractor of far more simple character can be rigged by any farmer on his land with an ox chain and a long maple, elm or pine stick to act as a lever. The lever, which should be some fifty feet long, is fastened to the stump with a chain, and to the other extremity a pair of oxen or horses are attached, which rapidly twist the stump out of the ground. The minor implements used in husbandry are very numerous and of good construction, many of them having a finish highly creditable to the manufacturers. Bone manure in different sizes was present, but no superphosphates made from bones by the addition of sulphuric acid. This is one of the most valuable special manures, and should receive careful attention. Too much thought is apparently bestowed upon the multiplication of agricultural machines, to the neglect of those artifices whereby the fertility of the soil is maintained and increased. As we cannot always depend upon rotation of crops to fertilize our fields, we must look to manures, and after properly prepared farm-yard manure, bone dust and the phosphate from bones are the most valuable.

Two portable steam-engines were on the ground. This is another advance promising much for the future. In a report from the committee appointed by the Board of Arts and Manufactures, relative to the Great Exhibition held at London in 1862, particular attention was directed to the products of our forests. We are glad to see that a very excellent beginning has been made by Mr. Saunders of London, who displayed a very good collection of native medicinal plants, all of which were collected in the neighborhood of London. We would suggest in the future displays of the kind, the entire plant, if portable, should be exhibited, and when too large for such a purpose, a portion of the trunk, and specimens of the leaves. The Fine Art department was, on the whole, indifferent. Among a few paintings and drawings of superior merit were some wretched caricatures, for they were nothing better, displayed in painting in oil or water colours. Steps should be taken at future Exhibitions to make some selection before giving space to productions which might decorate the parlour of a remote country inn, but should not be admitted in a Provincial Exhibition as illustrations of provincial art. Of the Ladies' work we have little to say: the most imposing contributions were the quilts, not differing in any marked particula r from former specimens. A little attention to the selection of patterns, and the proper combination of colour, would be attended with advantage, and destroy, perhaps, the uniformity which appears to prevail in those particulars.

The Natural History department received considerable attention, and was represented by Canadian stuffed birds, native fishes, native insects, mammalia, native plants, and specimens of the woods of Canada in section and with the bark; also that delightful source of amusement and instruction, an aquarium, was exhibited.

It does not come within the province of this journal to describe the farming stock; but it would be unfair not to express both gratification and surprise at the display. In every department there was a marked improvement, and all evidently in the right direction. There cannot be a doubt on the minds of any one present at the Exhibition that astonishing progress has been made in Canada in this department of husbandry.

The Address was delivered by the President of the Association, John Barwick, Esq., of Woodstock, who took an enlightened view of the importance of giving every encouragement to home manufactures. Mr. Barwick said in his Address:—

"Our aim should be to foster Canadian manufactures of those articles that we can advantageously produce. Every Canadian will concede that it is of great importance that our towns should be occupied by thriving mechanics and manufacturers, thereby giving to us a home market. How many of the youthful population of our towns and villages might be advantageously and economically employed in woollen and cotton factories who are now, in too many instances, a burthen on their parents, and at the same time it is to be feared are in a course of training to become vicious members of society. The crop of wool for this year has been principally purchased for exportation to Great Britain, heretofore it has been exported to the United States to be there manufactured. Flax and hemp are certain and very productive crops in Canada, and might be advantageously grown for manufacturing purposes."

Mr. Barwick also said that "a very excellent suggestion was made in the September number of '*The Journal of the Board of Arts and Manufactures for Upper Canada*,'—'That a museum of natural products, both mineral, vegetable, and even animal, might rapidly be formed at each permanent Exhibition Building.'"

The amount of prizes given by the Association this year exceeded $12.000; the number of entries was above 6.000. On Thursday, the day on which the public were admitted at a reduced charge, the number of persons who passed through the exhibition building exceeded fifty

thousand. We are probably, within the mark, when we hazard the opinion, that there were between fifty and fifty-five thousand visitors present. It would be premature to institute any comparisons, based upon statistics, between this and preceding Exhibitions. It is sufficient to say, for the present, that it far exceeded general anticipations; that it was well arranged, well sustained, and was a flattering and cheerful exposition of the progress of the country in wealth, industry, and civilization.

The Wheat Crop.

(*Continued from Page* 618.)

Of the red varieties, the following are those generally preferred:—

Burwell.—Straw long, stout, and coloured; ear large; chaff coarse and deep coloured; grain long-shaped and dark; sample generally good; large cropper, and very hardy.

Browick.—Straw long and stout; ear bold and full; less colour than the foregoing; grain short, plump, and well-shaped; skin moderately thick; very productive and hardy; sample generally classed among the finer varieties.

Bristol.—Very similar in character to the Browick; straw long; grain rather coarser and longer; very hardy, yield generally good; sample inferior.

Clovers.—Straw long; grain and chaff stout, but of a lighter colour than the preceding; sample fair; good cropper.

Hickling's Prolific.—Straw long and stout; ear large, and of a compact square form; grain short and roundish, of a deep yellow colour; chaff white; yield large, but of inferior quality.

Kessingland.—Ear large, dark yellow colour; somewhat coarse, but very productive.

Lammas.—One of the best varieties of red wheats; grain dark coloured, plump, and fine skinned; straw stout and clean; should be cut early, to prevent shelling; sample good, and liked by the millers; fair cropper.

Piper's Thickset.—Straw short and tough; ear square and compact, tapering towards top, with awns which gradually fall off when fully ripe; grain round, and redish in colour: sample fair; yield large.

Spalding's.—Straw long and stout; hardy, and very prolific; grain large, oblong shape; good average quality.

Velvet or Woolly-eared Bearded.—Ear long, dark red colour; grain large flinty, and coarse; chaff hard and close; difficult to thrash unless in good condition; early, hardy, and prolific.

The species *Triticum sativum* was formerly called *T. vulgare*, and was frequently divided into two classes—the winter, *T. Hibernum*, and the summer, *T. æstivum*. This classification is no longer recognized, as it is now well known that wheat, by being constantly sown in the spring, quite changes its habits as to its time of ripening. The produce of wheat sown in the spring acquires the habit of perfecting its growth quicker than the produce of the same wheat sown in the autumn. Hence the farmer when he sows wheat in spring should be particular to obtain seed the produce of spring-grown grain, and not the produce of that sown in the autumn. The same change takes place in all the cereals, and in other crops which we cultivate. The difference also in colour between the red and white varieties is probably due mainly to the nature and character of the soil in which they are grown. Fine white wheats gradually become darker and coarser, and ultimately change their colour altogether when grown continuously on cold, ungenial soils; while the coarser red wheats grown, year after year, on rich, warm soils, in a good climate, generally lose their characteristics, become a lighter red colour, than yellowish, and finally assume the external appearance of a strong white variety. It has been remarked that the grain in this respect is affected differently to the straw, in changing its colour and character more quickly than that does. Hence we have many varieties of red wheats with white chaff and straw, and varieties of white wheats with red straw — the chaff and straw retaining their colour after the influence of cultivation has affected a change in the grain.

In the foregoing, and all the other varieties of *T. sativum*, the straw is cylindrical in shape, and hollow. In the following species, the *T. turgidum*, and its varieties, the interior of the straw is occupied more or less completely by a pithy substance, which gives it toughness and strength; and the grain or seeds have a less regular and symmetrical shape than those already described.

The varieties of Turgid wheats are generally hardy, vigorous, and very productive, with long, tough, coarse straw. Having a low nutritive value, and being unpalatable to cattle, it is unsuitable for fodder; but where straw is in demand for thatching, litter, or similar purposes, this description of wheat usually is found to be more remunerative than the finer qualities, especially in cold and heavy soils. The ear is always bearded (awned). In some varieties the awns fall off as the grain approaches maturity, and thus a difference in appearance is given to them. The soils best suited for these wheats are the strongest and richest clays, in which we so often see the ordinary wheats go down towards harvest time—their stout, tough straw being fully capable of standing up against the action of ordinary weather, notwithstanding the size and weight of its ear. They all require to be sown in the autumn, and are always backward at harvest; therefore are more suitable for early than for late districts. The yield is great, averaging probably one-fourth more than that of the ordinary wheats. The grain, how-

ever, is very coarse; and as it is only used for one department of baking, the demand is very limited, and the market price generally very unsatisfactory.

The following are the varieties usually met with in cultivation:—

Rivet, Common.—Ears smaller and less compact than the next variety; awns stay on longer; grain long and flinty; heavy cropper, but being somewhat later at harvest than the Cone Rivet, is only suited for early districts.

Rivet, Cone.—Ears white and velvety, square and compact: grain whitish yellow, and larger than the common rivet; straw, bold, long and stout; generally hardier, and less liable to diseases; sample poor in quality; yield very productive.

Egyptian.—Ear woolly; straw long, stiff, and filed with pith; differs from the other varieties of Turgid wheats by the form of its ear, the lower florets being elongated, and forming in appearance, distinct ears. This is the variety so frequently met with under the name of "mummy wheat." It is like the others, a very productive sort, but of a like inferior quality.

At the Exhibition of 1851 specimens were exhibited of *hybrid wheats*, obtained by the systematic crossings of different known varieties, and prize medals were awarded to the successful experimenters. 'The specimens excited great interest from the importance of the process in other departments of the vegetable kingdom, and the known difficulty of hybridizing the *cerealia* in particular. This arises from the great care required to extract unexpanded anthers from one parent, and to replace them with the pollen of another—preventing at the same time, the stigmas to be fertilized from receiving any other pollen than that artificially applied, and guarding them afterwards, from the attacks of birds, and a variety of disturbing operations. The result appears in most cases to be an offspring stronger than either parent." (Jury Report on Class III).

In discussing the agricultural relations of wheat, the *soil*, of course, claims our first consideration. Wheat we know, has a very wide range of soils. In this country we see it grown on well-nigh every variety, from the light siliceous soils met with in the eastern counties, and in the green sandstone and the new red sandstone formations, to the difficult and disheartening soils of the London, the Wealden, the Oxford and the Lias clays. Some soils however, are clearly more suitable for it than others. Those best adopted for it are, of course, such as contain the ingredients necessary for its growth and perfection in the best proportions, and in a condition most available for the plant. We know that wheat will not flourish in any soil unless there is a certain amount of silica and potash for its stem, of silica and lime for the chaff or outer covering of the seed, and of potash, phosphoric acid, magnesia, and ammonia for the seed. These substances are generally found to exist in clays to a greater extent than in other descriptions of earth; consequently, we are accustomed to look upon our different soils as strong, medium, and light wheat soils, according to the proportions of clay they severally contain in their composition. *Pure clay*, which is a chemical compound of silica and alumina, would be unsuited to any description of vegetable growth; but clays are always more or less mixed up with other substances which give them their fertilizing value, while their own substance acts mechanically in a very beneficial manner, by giving tenacity—staple—to the soil, and by increasing its powers of absorption and retention of moisture, and also of condensing and retaining the ammonia so necessary for plant life. In soils containing large proportions of sand, or of organic matter, but deficiency in clay, we often see the young plant very luxuriant at first, but without the power to build up its stem, and consequently unable to assimilate those substances necessary to perfect its growth and to produce its seed.

In all descriptions of soils it is essential that they should not retain more moisture than is natural to their composition—that all the surplus should be got rid of by drainage, as, owing to the habit of the growth of wheat under suitable conditions, it requires less moisture after it has once sent out its roots than most of our other crops.

The preparation of the land for wheat depends very much upon the character of the soil and the general practice of the district. In some of the unmodified clay districts, especially if undrained, of the London clay formation, as in Essex; of the Wealden in Kent and Sussex; of the oolite clays in Oxford; and of the lias in Gloucester and Worcester, it is still the practice to give it a summer fellow, keeping it well stirred and cleaned, and sowing it down early in the autumn. This expensive and unphilosophical practice is, however, gradually disappearing as thorough-draining makes its way into the districts, and as the farmers recognize the immense advantages which the rapid development and adaptation of mechanical power, in the shape of farm machines and implements, now place at their disposal. Except under very rare circumstances, we should not admit the practice of an open fallow as a necessary preparation for wheat; but we should endeavour to occupy the ground profitably, by a crop which would take from the soil such ingredients as the wheat will not require, and which would leave in the soil behind it sufficient organic matter to satisfy the demands of the succeeding crop. This may be readily secured to the soil by growing a green crop, either a regular fallow crop of roots, as turnips, potatoes, &c., or a forage crop, as clover, such crop being determined either by the particular character of the soil or by the practice of the district. If the

soil be of a light, friable character, the Norfolk or four-course system (wheat after clover) is generally followed, the spreading roots of the clover giving that firmness to the soil which experience has shown to be so desirable for wheat. On such soils, too, the roller, either plain or ribbed, is a good friend to the farmer: it closes the surface, stops evaporation, and consolidates the body of the soil generally.

On strong lands, again, root crops are certainly the best preparation for wheat, provided the land can be cleared in time to allow for wheat sowing. In the north and other districts, where the five or six course system is carried out, either turnips, or potatoes, or mangel precede the wheat. All form good fallowing crops, allowing the land to be well cleared, requiring for themselves mineral ingredients different in proportions from the wheat, and at the same time leaving on the land a supply of organic matter for its use.

On very heavy soils root crops are rarely attempted, owing to the difficulty in obtaining a sufficiently fine tilth for the seed-bed, and also to the difficulty in getting them off the land before the bad weather sets in. On such soils beans are sown alternately with wheat. This rotation, though suitable as regards the chemistry of the two crops, has one great fault, that of preventing to a great extent that mechanical treatment of the soil which we know adds so much to its fertility. The bean stubble is ploughed in with its accumulated weeds; the wheat sown, and generally, on such soils, left unhoed until harvest; the ploughs are sent in again as soon after the field is cleared as possible; manure either ploughed in now or before seed-time in the spring, and the land is left for the winter fallow. In the spring the first chance of getting the beans sown should not be lost; and the only opportunity of getting the land clean is during the early period of their growth: and then the chances of weather on strong clay soils are considerable against you, and the weeds remain masters of the field, until a twelvemonth's fallow and a large expenditure in labour again clears your land of those unprofitable occupants. The addition of a third crop to the rotation, which would admit of a better preparation of the land, might be obtained in the smooth-leaved rape. This on such soils, grows well; it admits of the land being well worked and cleared before sowing, and of being kept clean during its growth; it comes to maturity early enough to be fed off by the end of September, and leaves a large amount of good dressing for the succeeding crop of wheat The good effect of the extra tillage in cultivating root crops is always shown in the succeeding wheat crop; and although different practices prevail necessarily in different districts, still, as a general rule, a farmer cannot deepen his soil too much, nor reduce it to too fine a tilth, in preparing it for the reception of his wheat.

Having, then, to the best of our judgment and our power, completed the preparation of the land, the next point for consideration is the *selection of the seed;* and this is a point of far more importance than farmers are generally disposed to concede to. We have no series of properly conducted practical experiments to refer to, which are always desirable in cases where scientific principles are so opposed to general practices as in this instance; but to those at all acquainted with natural history—the laws of animal or vegetable life—a little consideration would clear up any doubts they might before have possessed in reference to it. We may be told, it is true, that good seed does not produce a good crop, while the produce of inferior seed is sometimes of a superior quality. This may be quite true, and there may be many other ways of accounting for the result beyond the mere difference in the seed; but as a rule, the law of production—"that like produces like"—cannot be disregarded; therefore if we wish to secure the best results, it is important *that the seed sown should be of the best quality—that it should be perfect in itself—and that it should be fully matured.* The temptation of the higher price too often takes all the best grain of the farm to the market, while the inferior qualities, including the tail corn, with all its immature and injured grains, are, with a sadly short-sighted economy, considered good enough to risk the next year's crop upon.

Another point to be attended to in reference to seed corn is the advantage of changing it as often as circumstances will permit for seed grown in a different district, both as regards soil and climate, from your own; as seed constantly produced year after year on the same soil is apt to deteriorate in quality, and to produce a crop less vigorous and more liable to disease than if its conditions of growth had been frequently changed.

This practice of changing seed is becoming every year more followed, experience satisfactorily confirming the correctness of its principles. Not only is a more healthy plant secured, but an opportunity is offered to the farmer, by using as seed the grain of an earlier district, to accelerate the time of his own harvest, which in some seasons and in some places is a matter of considerable importance to him. Thus the light chalk and gravelly soils of Kent furnish a good exchange with the strong alluvial and clay soils of the opposite coast of Essex; and the fen soils of Huntingdon and Lincolnshire exchange seed beneficially with the wolds and chalk soils of Cambridgeshire and the green sandstone soils of Bedfordshire; while the strong, cold clays of Northumberland and Berwickshire, and the rich alluvial carse soils of the north would find the seed corn of the warm, friable soils of the new red sandstone improve the wheat produce of their broad and well-tilled fields.—*Our Farm Crops, by* John Wilson, F.R.S.E.

Deposits of Guano on the Coasts and Islands of the Pacific Ocean.

Translated from the French of the "Journal D'Agriculture Pratique" expressly for the "Mark-Lane Express."

The deposits of guano (*huano de Pajaro*) are distributed on the coast of Peru between the 2nd and 21st degree of south latitude. I saw the first deposits in the Bay of Papta. In advancing towards the south we found it at intervals up to the mouth of the Rio Leo. Beyond these limits guano is still met with—sometimes even in great abundance; but in that case it is nearly deprived of its ammoniacal salts and the organic principles to which it owes a great portion of its valuable properties.

In passing from the south towards the Equator the principal *huaneras* are those of *Chipana, Huanillos, Punta de Lobos, Pabillon de Pica. Puerto-ingles Isla Patilos, Punta Grande Isla de Iquique, Pisagua, Ilo, Jesus y Cacotea*, and the isles of the Bay of Islay.

Between Islay and a point situated at some leagues from Piseo, the *guano de pajaro* (or bird guano) is unknown, the waters being principally frequented by seals, porpoises, and seawolfs (*hobas*). The masses of guano, too—otherwise limited—which are found in these quarters, are almost wholly formed of the excrements and skeletons of these animals. The guano is deposited on small promontories and and cliffs, filling the interstices. In general, it is in such places the birds find a shelter from the breezes of the south.

The rocks of this part of the coast consist of granite, gneiss, syenite, and porphyritic syenite. The guano they contain is most often found in horizontal beds; sometimes however, they are strongly inclined, as at *Chipana*, where they are become almost vertical. In certain *huaneras* we noticed a mixture of the excrements of birds, and of those of fishes or cetacea (*lobos*). M. Francisco de Rivero particularly noticed this mixture at *Punta de Labos*, where, upon strata of a dark grey guano, he found superposed thin strata, almost black, of the thickness of two feet, covered over in their beds by various colours. The black stratum is filled with small stones of porphyry, shining and elliptical, which the seals are in the habit of swallowing, and which are always found in their dejections.

The deposits of guano are commonly covered over with an agglomeration of sand and saline substances—the *caliche*, which the workmen remove before commencing operations. On some points, as at *Pabillon de Pica* and *Punta Grande*, the bed is below a mass of sand descended from the neighbouring mountains, and nothing proves better its antiquity in this locality than an observation made by M. F. de Rivero. Upon the rock which serves for its base we find horizontal beds of guano supporting a stratum belonging to the ancient alluvium, of three yards thick, and in which we find impressions of marine shells; and upon this alluvium, contrary to what ordinarily occurs, are placed many strata of guano, covered over with sand of the modern alluvium.

In general, the working of guano is carried on openly, after uncovering the bed, by taking away the crust of *caliche;* but in the *huanera de Chipana* it is worked by subterraneous galleries driven under the saline and arenaceous agglomerate.

In the *huanera de Punta de Lobos*, the *guano de Pajaro* lying in horizontal strata slightly undulating, is of a very dark brown, and enclosed with *guano de lobo*, such as the bones of dolphins, seals (*lobos*), and the polished elliptical stones which characterize the excreta of those animals. They attack the mass with the pick and gunpowder. The guano, put into sacks, is shipped upon rafts (*valses*), to be afterwards transhipped into small boats (*guaneros*. The workmen receive a piastre (3s. 9d.) per day, food and fresh water, which they are obliged to fetch from the *Rio loa*, when the ships coming to load do not bring it.

The *huanera de Pabillon de Pica* takes its name from the village of Pica, thirty leagues in the interior. It is a conical mountain, 325 metres (355 yards) of altitude. The crystalline rock, which is traced halfway up, is covered with a modern sandstone perfectly characterized. The depth of the strata of guano, superposed on the sandstone, is from fifteen to twenty *varas* (from twelve to sixteen yards). The most esteemed produce is found in an escarpment of two hundred *varas* wide, which covers a mass of sand. In the inferior zone the strata are separated by an ancient alluvium of two or three *varas* in thickness, and of great hardness. Sixty workmen are established on the *huanera*, the roadstead of which is deep enough to allow the boats (*guaneros*) to anchor at twenty-five *varas* (twenty yards) distance from the wharf.

To the north of Iquique are three Chincha Islands, the richest in ammoniacal guano, in 13 degrees south latitude, and lying south and north Their summits do not exceed 110 *varas* (about ninety yards). The granite base is surrounded with reefs—so much the more dangerous for navigation that there almost constantly prevails a destructive wind (*al paraca*), from ten or eleven o'clock in the morning to the sunset. The reflection of the sun and the dust raises the temperature in a singular manner. The workmen only work at night.

The guano lies in horizontal strata, most commonly undulated towards the extremities. In the cuttings we observed fissures filled with crystals of ammoniacal salts: we found in these *huaneras* petrified eggs, feathers, bones, and even mummified birds.

CONSTITUTION OF GUANO.

The first ideas on the nature of guano are

due to Fourcroy and Vauquelin. In a sample brought by Humboldt from the Isles of Chincha they found:—

1st. Uric acid, in part saturated with ammonia and lime

2nd. Oxalic acid, combined with ammonia and potash.

3rd. Phosphoric acid, united with the same basis and lime.

4th. Small quantities of sulphate of potash, chloride of potassium, and chloride of ammonia.

5th. A little quantity of fatty matter.

6th. Sand, in part quartzose, part ferruginous.

The composition of the ammoniacal guano was definitively fixed. They have since detected some weak portions of xanthine and guanine.

Of fifteen analyses made by Mr. Nisbet upon samples from the Chincha Isles, the composition of the guano was as follows:—

Organic matters and ammoniacal salts	52.52
Phosphate of lime	19.52
Phosphoric acid	3.12
Alkaline salts, &c.	7.56
Silica and sand	1.46
Water	15.82
	100.00
Soluble phosphate of lime . .	6.76
Insoluble do. . . .	19.52
Total phosphates	26.28
Nitrogen	14.20
(Answering to ammonia . . .	17.32)

The character of the guanos brought from a distance from the coast of Peru is—great richness in phosphate and the almost complete absence of azotous matters. These guanos, whatever may be said in their favour, are known not to possess the qualities, and consequently not the value of an ammoniacal guano, in which there enters, independent of the phosphoric acid, azote immediately assimilable by plants. I do not, in the meanwhile, deny their fertilizing properties. I believe also that it would be easy to render them *ammoniacal*, in putting to profit the properties they possess, when they are dry and in powder, by absorbing from 0.10 to 0.15 of aqueous solutions of sulphate of ammonia, or of nitrate of soda, incessantly, to be pulverulent.

It appears also evident that the earthy guanos and the ammoniacal guanos have all the same origin—the dejections and remains of sea birds. The disappearance of the ammonia in the first is due, probably, to local circumstances, such as the abundance and frequency of rains, which naturally favor the decomposition of organic substances, or the dissolution of salts with an ammoniacal base.

That part of the coast of the South Sea where the ammoniacal guano is deposited, presents, in fact this peculiarity—that upon a considerable extent, from *Tumbez* to the desert of *Atacama*, rain is, we may say, unknown; whilst beyond those limits, to the north of Tumbez, in the impenetrable forests and marshes of Choco, it rains almost without ceasing. At Payta, situated to the south of that province, when I was there, it had been seventeen years without rain. At Chopcope (lat. 7 deg. 46 m. S.) it was noted as a memorable event that it rained in 1726. It is true it lasted forty nights, but ceased during the day.

The rarity of rain in those countries is attributed to the permanence and intensity of the S. S.E. winds. It is in May and June that they blow with the greatest force: the sky is then of admirable clearness. The temperature is lowered by the effects of these currents of air, coming from those austral polar regions, which announce the end of summer (*verona*). There is no storm on this Peruvian coast. An inhabitant of Piura or Sechura, if he has not travelled, has no idea of thunder. Yet we should singularly deceive ourselves if we imagined that drought is permanent upon the coast. For many months the earth is watered without rain, and the valleys and hills are clothed with verdure; it is then that a period arrives in which the wind from the austral region is replaced by one from the north, scarcely perceptible—so weak, that it has just force enough to move a weathercock, or to agitate the sails of the ships; it is a slight movement of the air—an undecisive calm, indicating that the S. S. E. breeze has ceased. After this change, from July to November the atmosphere assumes quite a different aspect. The wind in assuming by degrees the S.S.E. normal direction, slowly modifies itself. It is then winter (*invierno*). The bright light with which the country was inundated is succeeded by a half-day, which oppresses the spirits; the heaven is veiled with a thick fog, and it is but rarely, during a few bright moments, that we perceive the sun. Regularly between ten o'clock and noon, vesicular vapour rises, and is suspended at a certain height, when it becomes a cloud. During the movement a part of the fog turns into drizzle (*garua*), which moistens the earth in the manner of dew. The *garuas* (that is the Indian term) are never abundant enough to make the roads impracticable, or in the slightest degree to penetrate the clothes; but by their persistence they introduce into the soil enough water to render it fertile, and maintain it in a condition of convenient moistness, when the south wind resuming its impetuosity, drives them away and prevents their appearance. Besides, upon those points, fortunately numerous enough on the coast, the aridity is only on the surface; at a certain depth we meet with a watery sheet, the origin of which is in the Corderillas. The pluvial waters received by the mountains of the Andes, unless they are extremely abundant, do not always reach the sea. During a course of twenty or thirty leagues they are absorbed by the sand, and as this takes place at Piura and

Sechura, to find them we must dig the bed of the dried-up torrents. It is at once to this absorption of an arenaceous soil, and to the frequency of the drizzling rain or *guaruas*, that the country comprehended between Tumbez and Chili owes its not being a desert throughout its whole extent.

It is exactly in this zone, where rain is sufficiently rare to be considered an event, between Payta and the Rio Loa, that the beds of ammoniacal guano are situated. Below, more to the north, as also more to the south of these extreme points, the guano, exposed to the tropical rains, is generally deprived of ammonia and soluble salts; an insoluable salt has resisted; this is phosphate of lime, the base and characteristic of earthy guano.

For guano to have been accumulated in sufficiently large quantities in the *huaneras*, it requires a concurrence of circumstances favourable alike to its production and preservation—a climate of unusual dryness, under which the birds have not to screen themselves from rain, in which terrestrial accidents offer crevasses and rents in which they can repose, lay, and hatch, sheltered from the strong gales of the south; in short finding food such as they find in the waters of the coast. In no part of the world is fish more abundant. It sometimes happens during the night, as I have myself witnessed, that they come stranded alive upon the beach in prodigious numbers, without the sea being agitated, as if they wished to escape from the pursuit of the enemy.

One of the Spanish navigators who accompanied the French academicians to the equator, Antonio de Ulloa, relates that the anchovy is in such abundance on that coast, that there are no figures to express or represent the quantity. It suffices to say that they serve for food to an immense number of birds, which make war upon them. These birds are commonly called *guanos*, among which are many albatrosses, a species of cormorant; but all are comprised under the general name of guanos. Sometimes, in rising on these isles, they form a cloud which obscures the sun. They take an hour and half or two hours in passing from one place to another, without any perceptible diminution of their numbers. They extend themselves above the sea, and occupy a large space, after which they begin their fishing in a very amusing manner; for, suspending themselves in the air, and whirling round at a height proportioned to their sight immediately they perceive a fish they soar higher, head downwards, and then clasping their wing to their bodies, they strike with so much force, that we perceive the bubbling of the water at a great distance. Afterwards they resume their flight, while swallowing the fish. Sometimes they remain a long time under water, and emerge far from the place where they had plunged in, doubtless because the fish made an effort to escape, and they pursued it, disputing with it the lightness in swimming. Thus we see them incessantly in the places frequented by them, some falling into the water, others rising from it, and as the number is very great, it is amusing to see their confusion. When they are satisfied they repose upon the waves; they go to rest with the sun, collect together, and all this numerous band seek their resting place. We have observed at Callao that the birds who visit the isles and islets situated to the north of that port go at early morn to fish on the southern coast, and return in the evening to the places from whence they came. When they cross the port, one can see neither the beginning nor the end of the flight.

To be continued in our next.

Good Cultivation v. Bad Cultivation, from a Chemical Point of View.

There is a difference between good and bad management in farming, that is not so easily accounted for as practical agriculturists are sometimes led to imagine. This is no less true in the cultivation of land than in the rearing and fattening of cattle. In either department of the farm it is common to attribute success to skill and capital, and the reverse to the contrary. But we all know that it is neither skill nor capital that makes corn and cattle grow. These are but means to certain ends, and when we come to inquire what those ends are, we often find ourselves beyond our depth in an unfathomable sea of troubles, doubts, and perplexities.

Let us confine our observations on the present occasion to land. A march fence runs up between two farms; geologically there is no difference between the soil and subsoil on the one side and the other, but there is a wide difference between their agricultural conditions as to fertility, and the amount of produce they respectively yield. In short, the one is "farmed with skill and capital," and the other is not, and such is considered quite suficient to account for all differences. But to understand what "farmed with skill and capital" really means in every individual sense, and also the adverse management, the practical farmers require to see the land itself and the crops it yields. With them "seeing is believing;" for in the absence of ocular demonstration, such expressions have little more than the shadow of a meaning relative to what they are intended to convey. The land speaks for itself; so do the crops produced by it, and practical agriculturists are familiar with the language of both, although they may not be able to give a proper account of all that they see.

The difficulty experienced amongst practical men, it will thus be seen, is to give a scientific exposition of the facts of the case in the two systems of management, good and bad, under

notice. They see that a certain routine of drainage, cultivation, manuring, seeding, hoeing, and so forth, has produced certain favorable results in the one case, and unfavorable in the other; but when we enter farther upon the inquiry as to the details of the several operations, and how such results are chemically and mechanically produced, they are lost in a labyrinth of surmisings, from which there is no clue to lead them outwards into the daylight of science. Many discoveries have to be made before it can be said we even know anything as we ought to know relative to the chemistry and mechanics of the soil, and of the crops it yields.

This may be humbling, but it is a plain matter of fact, and the sooner we, as agriculturists, admit the existence of a great blank here in the science of our profession, the sooner and more likely are we to set out in search of the practical information we stand so much in need of in both cases. "Knowledge is power;" and there cannot be a doubt, that if we properly understand how certain fertilizing results were produced, it would enable us to pursue a much more economical and profitable system of husbandry than we now do—even the most successful in the field. From time immemorial the experienced and skilful cultivator has been familiar with a certain healthy condition of the land necessary to obtain a bountiful harvest; but in how many cases has this success been attributed to "his own good luck," or personal labours, instead of to certain mechanical and hygrometrical conditions of the soil necessary to produce certain chemical and fertilizing results? However absolutely expedient it may be to apply certain quantities of manure to land, yet all who have any experience in manuring are well aware that it is not manure alone that produces crops of green forage, much less a plentiful return of bread corn, for the bad farmer often applies more manure than the good, while he fails to reap a half, or, it may be, a third of the quantity of produce, and that quantity, too, of an inferior quality. Indeed, it may be accepted as an established axiom in farming, that cultivation, including drainage, has more to do with the growth of corn than farm-yard manure, or any of the artifical manures now applied to land.

The reader is not to conclude, from these generalizing remarks, that we are under-estimating the value of manure. On the contrary, the most fertile lands under aration require repeated doses of manure to maintain them in this condition. In point of fact, manure is but another name for the food of plants; and as upwards of 70 per cent. of the weight of growing crops is water, it consequently follows that it is the most important constituent of manure. Next to water, the organic elements of plants occupy the most prominent place, the quantity of mineral food consumed being small. But when we enter the field, and begin to inquire into the resources from whence plants derive their food, we find that they obtain a large supply from the atmosphere, and also that heat, light, and certain electrical conditions are all essentially necessary to their healthy vitality. We find much more than this: for the soil is full of decaying vegetable matter, the roots of the previous crops: so that the further they ramify throughout a well-pulverized soil, the greater the quantity of manure from this source. Next we have an important supply of animal matter from insects and the fæces of our domesticated animals. Then we have three different kinds of decomposition, besides certain laws of chemical economy to attend to; and when we have examined all these under the very dim, shadowy, and imperfect light of science in which they are now seen, we can experience but very little difficulty in perceiving how important is the function of cultivation and natural fertilization, so to speak, when compared with that of manure artificially applied.

As we thus advance in the investigation of our subject, we begin to see its length and breadth. Although we cannot perceive with the naked eye all the chemical phenomena that are taking place below the surface of the soil, we can nevertheless see enough to account for the success of the good farmer and the comparative failure of the bad. We can observe, for example, three different kinds of chemical change in the breaking up of animal, vegetable, and mineral substances to their original or new constituents—a mean, and two extremes, as it were. In the mean—the well-cultivated field—the highest degree of economy is not only preserved, but a much larger amount of fertilizing element is derived from the weather or moisture and atmosphere of the soil, in combination with mineral matters, than is indicated by the amount of manure artificially applied. In the one extreme there is an excess of water, the lands being imperfectly drained and aerated; consequently we have hydro-decomposition—nay, malaria—with all the "will o'-the-wisp" phenomena so adverse to the health of cultivated crops. And in the other extreme we have eremacausis, or the food plants dissipated in the atmosphere in the form of gases, the soil being thus left in a comparatively barren and unproductive state.

In applying these several data first to the land farmed with skill and capital, we have to observe that the staple or soil under the immediate action of the plough has a greater affinity for water than the staple of badly-farmed fields—that it obtains a much larger benefit from night dews—that it contains in its pores a much larger quantity of water for supplying the crops from summer showers; consequently, from these and other data, it suffers less harm from eremacausis in times of drought. There is, it must also be observed, a wide difference between different kinds of soils in these several respects, but

in every case there is a common principle exemplified, one which is very observable in more ways than one: for the crops grow faster and heavier, thus extracting a much larger quantity of water from the soil, while the soil nevertheless continues to contain more water.

This greater affinity for water is partly accounted for by the soil containing a larger percentage of decaying vegetable and mineral matters, and partly from its mechanical sub-division; while these differences give rise to others, relative to temperature, electricity, aeration, &c. that must of necessity affect the chemical phenomena that take place in the soil. It is a well-known fact that decaying vegetable matter—such as the roots of plants, when they undergo what may be termed a healthy state of decomposition, the process being attended with the proper supply of air and moisture—have a great affinity for water, drinking it up and retaining it in its pores like a sponge; and that the soil, when in a certain state of pulverization, also holds more water, on the same principle, than when it is otherwise cultivated.

Of the chemical changes that take place in the fertilization of the soil, as when it is under a naked fallow, and of the products formed which constitute the food of growing crops, very little is yet known that can be relied upon as matter of established fact. That the process in the case of fallow, or land without a crop, is different from the process that takes place in the formation of food for growing plants, is more than probable; and that the several processes must differ widely from each other in their chemical characters in different kinds of soil, in different climates, and in different temperatures, is equally manifest. Indeed, the different species of plants that spring up naturally under such a diversity of circumstances may be accepted as practical evidence in support of these conclusions. Moreover it naturally follows as a corollary, that the fertilization of different kinds of land for the growth of any individual crop, or the enriching of any one quality of soil for the growth of different kinds of plants, involves just as many chemical processes. But, although general conclusions of this kind may be safely drawn, from their having the sanction of practical illustration, yet of the innumerable chemical details which they must of necessity involve in the soil, as a laboratory, nothing is definitely known, comparatively speaking.

The facts just noticed require a twofold illustration, thus: In the popular phraseology of the farm, we limit fertility to that condition of the soil conducive to the growth of wheat, barley and the other cultivated crops. We cultivate the land for the production of these crops, and, consequently adopt those means calculated to supply them with the food which they respectively require. Hence the familiar doctrine of different kinds of manure for different kinds of crops—one kind to wheat, for example, and another to turnips, &c.

This limited sense, however, of the expression "fertility," is not altogether a correct one, when practically examined at the bar of experience, either according to the current testimony of things, or in the more definite language of science. Thus the soil of the good farmer is rich for the produce of corn and turnips: that of the bad farmer is rich for the growth of weeds. The former is the more fertile soil of the two for the growth of corn and turnips; the latter the more fertile of the two for the growth of a different class of plants, yclept "weeds" In the one case, the manure undergoes certain chemical changes, to prepare it for the peculiar vegetable organization exemplified in wheat, &c; but in the other case, it passes through a very different process, in the laboratory of the soil before it appears in the form of weeds.

The soil is thus a laboratory in both cases, exemplifying not only the apparatus of Nature—whom we may here compare to a working chemist—but the raw materials, agents, &c, used in the process of enriching the land, and and feeding our crops with the food they require. It is when we thus enter Nature's workshop, so to speak, that we lose ourselves in the mysteries of her handicraft, being unable as yet to follow her throughout her various manipulations. Discoveries are much wanted in this department of chemical science; and from the peculiar character of the processes, as regards the preparation of the raw materials, their organization, and the agents necessary, in both cases the most persevering research will be found necessary to obtain success.

One fatal mistake, or fallacious course, we must guard the reader against; and that is, to trust too much to the laboratories of our agricultural chemists, as affording a faithful reading of Nature's chemistry in the soil, and the vegetable economy of plants; for the discoveries above referred to have first to be made, before they can be explicitly relied upon. But to this we shall return, when we have examined the other two cases formerly designated the two extremes —*land containing too much water, and land deficient of water.*

The former of these involves the chemistry of manure in undrained lands, or the decomposition of animal, vegetable, and mineral matters in a soil where the atmosphere is excluded, by its pores being filled with water. Bogs, swamps, and marshy lands are familiar examples of this kind, as are also badly-drained and ill-cultivated clay soils, in wet seasons. From time immemorial, it has been a by-word amongst farmers—"Just as well throw the manure into the river, as place it in such lands." That this old saying involves a most important chemical truth, is fully borne out by the experience of all who have manured such soils. It, therefore, only

remains to account for such unprofitable results.

But, before this can be done satisfactorily, many discoveries have to be made in this case, as in the last; and to these we shall return.

Our next topic—the other extreme—is, wasting our manure by *eremacausis*. When the soil burns up, during summer, the products of combustion of animal, vegetable, and mineral matters, more especially of the two former, are dissipated in the atmosphere, in the form of gases. Some subsoils are said to "drink in all the rain, and eat up all the manure," thus leaving nothing to support vegetation. Such is the chemical language of practical men; and of the truthfulness of its meaning there cannot be a doubt raised. In Africa and Asia, vast regions of what were once fertile productive lands, are now drifting, sandy deserts, through the instrumentality of this most ruinous process—*eremacausis*. Nor is its wasteful agency confined to those unfortunate regions; for in dry seasons, and, indeed, during summer generally, there is a very heavy loss sustained in this country by it. Thus, whenever crops begin to suffer from drought, and the land to "burn up," then the wasting process of *eremacausis* commences. The organic matters of the soil then begin to decompose, their constituent elements being given off into the atmosphere in a gaseous form. From the shortness of our summers, the general moistness of the climate, and the early rains of autumn, the parching work of devastation is arrested, but not before much harm is often done, not only to the crops on the land at the time, but also, prospectively, to subsequent crops.

The manure, in short, has been wasted—both that which is naturally in the soil, such as the decaying roots of plants, and that which was artificially applied.

We now come, as formerly promised, to offer a few remarks in reference to each of these examples or processes of decomposition, partly to show their application in practice, and partly to stimulate discovery in the research of those important truths in chemical science that evidently lie hidden at no very great depth, some of them, below the surface. The question is a comparative one—to choose the good and avoid the bad We want to avoid the two extremes—the wasting of our manure by hydro-decomposition and eremacausis, and to adopt the means for our general practice when decomposition is accompanied with a suitable supply of air and water in the soil. In this case oxygen is derived both from the water and the air to support combustion, so that the hydrogen of the former and the nitrogen of the latter are thus liberated—not however in a free state when the process is properly performed, but in combination with other elements in such a manner that they unite in forming ammoniacal compounds of a highly fertilizing quality. We have long advocated the doctrine which this conclusion involves as being imperatively necessary to account for the enriching results of good cultivation and the heavy crops grown under good farming, and which up to this date have not otherwise been satisfactorily accounted for. No doubt we have "the clouds" from whence some theoretical chemists have drawn a plentiful supply of ammonia, nitric acid, &c., to account for all deficiencies in the soil? But, unfortunately for this doctrine, on applying water artificially to the land, and under a clear cloudless sky, we find the evidence of an abundance of fertilizing ammoniacal matter thus evidently created somehow or other in the soil. If some plants exhale ammonia from their leaves, thus evidently manufacturing it within their system, why should the manufacture of ammonia in the soil, under special and even more favorable circumstances, be thought incredible? And if this is true, as we believe it is, and as results prove indirectly, why should we not endeavor to discover those peculiar conditions of the soil, the laboratory apparatus and re-agents of Nature necessary to the fertilization of our lands on so favorable terms? If practical chemists can manufacture certain ammoniacal products in their laboratories on the scientific principle, and if our best practical agriculturists can do the same in the soil by specific cultivation, why should not agricultural chemistry "stir up her nest," if we may be permitted to use the well-known simile, and discover the *scientific rationale* of so important a practical result? To us the principle appears as clear as the light of day; but the practical exposition of that principle being matter of fact—certain proximate principles which in all probability are different in different qualities of soils—they as a matter of course fail to be discovered and identified in every individual case what they are and what are their ultimate principles. There is here obviously a blank in chemical science that requires to be filled up in order that the great body of agriculturists may profit by its reduction to practice. The two extremes which we wish to avoid corroborate in some measure the conclusion at which we have just arrived; for, in hydro-decomposition, in the case of undrained lands, the oxygen that supports combustion is almost exclusively derived from the water, so that a large amount of hydrogen is liberated. Now, this hydrogen is found in the form of sulphuretted hydrogen gas, carburetted hydrogen gas, phosphuretted hydrogen gas, and so on, according to the special circumstances of the case. Again, in the other extreme—eremacausis—there is no water, and consequently no hydrogen set free. In this the oxygen that supports combustion is derived almost exclusively from the atmosphere of the soil, and consequently an excess of nitrogen liberated, but not in a form to be of any benefit to the land. There is now a tendency to an ultimate analysis instead of the formation of proximate principles for vegetable organiza-

tion—a chemical change diametrically opposite to that which we wish to reduce to practice. Thus in the one extreme, that which we have just noticed, viz, eremacausis, the oxygen consumed in the process of combustion or decomposition is derived from the atmosphere; in the other extreme hydro-decomposition is derived from the water which undrained land contains in excess, to the exclusion of air; but in the mean, which we wish to carry out into practice, it is derived from both the water and the air, and under circumstances to economise the liberated elements of ammonia. The former two, the extremes, illustrate the chemistry of the bad farmer; the mean, that of the good.—*Mark Lane Express.*

Colonial Wheat.

(*From the Mark Lane Express.*)

The British colonies are so numerous and so widely spread over the globe, that collective information, illustrated by specimens of their agricultural productions, will be of great interest. We often meet, for instance, with exaggerated statements, and exceptional instances of the productiveness of the Australian colonies, which are to be regretted. Thus Dr. Lang, an over-zealous colonist, is said, not long since to have met the lie direct from a Suffolk farmer, for stating that land in the Clarence and Richmond districts of New South Wales would produce 80 bushels to the acre. This is of course absurd, although large occasional growths have been made. On the table land at Argyle, at Menangle, the Kurrajong, and other favoured spots in the colony, 40 bushels, and even more of the best wheat have been grown. This, however, is not common. In New South Wales farming is more slovenly than in any of the adjoining colonies, but yet it has the largest average production. In South Australia, where the most attention is paid to it, the average is the lowest. The general average for New South Wales would appear to be about 15½ bushels to the acre. In the county of Cumberland alone it is 16½ bushels. In Victoria, the average production is 15 bushels; in Tasmania 14, in South Australia 12, and in the United States 13 bushels. The wheat of South Australia and Tasmania is generally best in quality, and commands the highest price. A sample of Menangle wheat from New South Wales took the great prize at the Paris exhibition. The heavest wheat for show was that of Mr. Shaw, Canada, which weighed nearly 83 kilogrammes (182 lbs.) the hectolitre 2¾ bushels. The handsomest sample of wheat was from the Cape Colony, of a large grain, regular form, and slightly elongated, and as white in colour as bleached wax, and weighed about 81 kilogrammes the hectolitre. The wheat exhibited by Mr. Gibson, of Tasmania, Mr. H. Gumfletor, of New South Wales, and Mr. Barker, of Victoria, resembled this closely, but was inferior in colour. A wheat shown by Mr. Gibson, weighed 82¾ kilos., one by Mr. McArthur 83 1-3rd kilos., and that of Mr. Barker 80 kilos. All these received first-class medals, as did a white spring wheat, shown by the Canada Company. Three other exhibitors from Tasmania received second-class medals for wheat. The Australian wheats, exhibited in 1855, were nevertheless inferior to the fine wheat shown in Hyde Park in 1851, from South Australia. It does not appear, however, that those fine grains, sown in this country, retain the excellence of their original type. In the words of Mr. Denison, grains matured under a hot sun form, according to the commonly received opinion, the most valuable seed; but in the case of wheat, the practice seems to be the the reverse of this. It is certain that our strong and prolific wheats are imported into France for seed. These strong and coarse wheats, no doubt, refine in colour and in quality under a more southern sun. It does not appear that the exchange of the grains of the south to our northern latitudes is attended with results equally advantageous. It would be desirable that some careful experiments should be made to induce to greater certainty on this point of so much interest.

To Keep Potatoes. Bury them.

Sir,—Your notices of the conservative principle in seeds buried at a depth beyond the action of air and moisture brings to my recollection a case of potatoes being buried for two years, six feet under the surface, at the end of which time they were taken up quite sound and good for use. The case I refer to was the result of accident, and happened thus. I had an old ice-well of the ordinary description, which I abandoned when I built one constructed of double timbers on the surface, after the American fashion. My gardener used, for several years, the old well as a potatoe-store. It happened three years ago that the roof fell in and buried several hundredweights of potatoes, which as we had plenty was not cared for at the time. Last year we required stones, and had those forming the sides and roof of the old ice-house dug out when to our astonishment we found almost the whole of the potatoes as sound as those of the same year's crop. I mention this as it may be turned to account in seasons when we have, as we had last year, a surplus crop, that by burying them deep enough, and in a dry place, we might secure ourselves against a short crop, as in all probability will be the case this year on account of the prevailing disease. In mentioning this to a friend learned in such matters, he tells me that potatoes buried one foot deep produce shoots near the end of spring; at the depth of two feet they appear about the middle of summer; at three feet in

depth they appear very short and never come to the surface; and between three and five feet they cease to vegetate. He further informs me that he has buried potatoes in his garden at the depth of three and a half feet, which were not removed until after one or two years, when they were found quite sound and possessed their original freshness, firmness, goodness, and taste.—I am &c., W. G. JOHNSTONE.—*Scottish Farmer.*

Scour amongst Lambs.

Hundreds of lambs are now dying every week in the midland and western districts of England from debilitating diarrhœa, produced by the accumulation in the bowels of myriads of minute thread-like worms, similar to those which at this season of the year infest the air passages of young calves, and produce the disease commonly known in Scotland as "hoose." It is not confined, as is frequently the case, to localities sheltered by trees or by numerous and overgrown hedges. It has appeared on the usually healthy clovers of the Cotswold hills, as well as in the lower meadow lands. One eminent Cotswold breeder has lost since the month began fifty of his lambs, or more than half of those affected. Another large breeder and buyer has lost nearly a hundred; and both of these gentlemen have good sound land, on which lambs thrive remarkably well. Thin-looking and dull, with a dry unthrifty coat, the sheep lags behind its fellows, pays frequent visits to the watering place, has usually a short choking cough, and to use the shepherd's homely phrase, "it runs out." The common nostrums used in such circumstances are sometimes resorted to, but seldom with much effect; the diarrhœa continues, the strength fails, and the animal seldom survives a week, and often dies in half that time. If the animal be opened, the thread-like worms referred to will be found amid thick unhealthy mucous, aggregated in little masses, and distributed especially throughout the small intestines. Notwithstanding the popular idea to the contrary, there is seldom any appearance of inflammation, and the stomachs and bowels as might be expected, are nearly empty. Filaria are also frequently found on the bronchial tubes and lungs, accounting for he cough and breathlessness which so generally accompany the scouring. It should be recollected that these filaria, whether in the digestvie or respiratory organs, must be looked for within a few hours after death; for if the search of them be longer deferred, they are distinguishable with more difficulty, and by-and-by appear to be broken up and lost amongst the thickened mucous. In spite of the losses which generally attend the disease, it is easily curable in its earlier stages by any of those remedies which kill the worms. For this end few things answer better than a teaspoonful of oil of turpentine, given with a little oil, and repeated daily, or every second day. Three or four doses generally effect a cure. "What," we have repeatedly been asked, "won't the physic increase the scouring?—Shouldn't laudanum, oak bark, or other astringents be used to staunch the running?" This is the treatment often pursued by those unacquainted with the nature of such complaints They forget that diarrhœa, in the first instance, usually depends on the presence of some irritant matters in the alimentary canal, and is induced by a natural effort to carry them away. Thus misinterpreting the case, and ignoring the conditions on which it depends, they vainly endeavour to restore health by at once arresting the discharge. Greatly more rational and effective is the administration of a properly regulated dose of physic which removes the irritant, and thus allows the bowels to resume their natural state. A like principle is applicable in the case of these filaria. They are poisoned by the turpentine, and effectually removed by the laxative with which it is united. It is perfectly unnecessay to give the medicine, as if often done, by the nostrils. There is thus great risk of choking the struggling patient, whilst the draught, whether given by the nose or mouth, finds its way into the stomach or bowels, where its pungent penetrating qualities carry prompt destruction to the parasites. In certain seasons and localities this complaint attacks calves as well as lambs, and occasionally proves troublesome and even fatal. More frequently, however, the filaria accumulate in the air passages, producing the familiar hoose, which of various degrees of severity occurs during the autumn months. The treatment is exactly the same as that just advised for lambs. The dose for a six months' calf may consist of a tablespoonful of oil of turpentine and three ounces of linseed or castor oil. The medicine should be given by the mouth after several hours' fasting. In the large majority of cases, the unthrifty appearance, slight cough and disordered bowels, which are so prevalent amongst calves during autumn, depend on those troublesome filaria, and are easily remedied by the timeous use of a few doses of the turpentine and oil. Attention must also be paid to general comfort—to the supplying of good food, affording proper shelter in the cold, frosty nights, and avoiding over-crowding. —*North British Agriculturist.*

The Potato Disease.

This mysterious scourge is again manifesting itself on this continent, and in many parts of Canada the potato crop, which has only been just raised, is rapidly decaying. We learn that such is also the case in several parts of Europe, including Great Britain, while in Ireland where, unfortunately potato culture has of late been

very much extended, the disease had assumed the most malignant form.

The following remarks from the *Scottish Farmer* relative to the disease and storing of the Potato will be found interesting :

"The long-continued wet and broken weather has already destroyed a large portion of the potato crop, and that portion which yet remains sound will require every precaution in lifting and storing it for the winter. The sound potatoes are at present in a highly delicate condition, and very susceptible of any influence which tends to promote putrefactive fermentation. In gardens, even where the crop is mostly sound, it is found that the tubers are softer and more watery than they were a month ago. This in many cases has proved the precursor of rapidly-spreading disease, yet roots in this condition stand a better chance of remaining sound in the ground than in any way which it is possible to store them. Before the appearance of the disease in 1845 it was quite common to store potatoes in large masses in houses. The roots would often keep quite sound in this state through the greater part of the winter. No fermentation was induced, and any little heat generated had the effect or causing the roots to sprout. Since that time, however, things have been entirely changed. In 1845 the larger portion of the crop was taken up to all appearances quite sound; but wherever it was stored in large pits or in houses a destructive fermentation was induced, which speedily reduced the roots to a rotten mass. As is well known, the warm and rainy weather of 1846 gave rise to the most virulent which disease has ever assumed in this country. It was only a small portion of the crop that was worth the lifting. The drier seasons that followed seemed to have the effect of warding off the disease to a greater or less extent in certain districts. In Scotland, too, as a general rule, the malady has not been anything so severe as it has been in England. This may be mostly ascribed to the lower temperature and to the less frequent electric explosions in the north. It has been long observed that thunderstorms seem to stimulate the latent seeds of the disease, and promote first the destruction of the haulm and then that of the tubers. Thunderstorms have been pretty geeral over Scotland this season, but it may be remarked that those localities which escaped them are at present far from free from the ravages of the disease.

It has been found that putting together potatoes in large quantities has often had the effect of spreading the taint through the whole. For this reason it is seldom that they are now stored in houses. The small the quantities that can be put together the better, as it will diminish the risk of their spoiling. The narrower therefore that the pits are made, so much the more chance is there of the roots keeping through the winter, and not sprouting prematurely in spring.

It is far from advisable to begin to store before the weather becomes somewhat cool, as heat is very apt to spread the destructive taint. The mere handling of the potatoes, too, before the crop is ripened, and especially in the condition it is at present, excites the dormant or undeveloped stages of the disease; and hence the rapid course which we already read of its running in roots that have been recently lifted. A good many, seeing the stems totally destroyed, imagine that the crop is fully ripe, and may be stored when the whether is favourable. This, however, is a highly dangerous practice, and it is better to wait till the bracing weather of October shall have so far dried the soil and ripened or hardened the roots.

Dry weather in the latter part of October is much to be desired; for unless the crop is stored free from wet, there will be more or less decay in the pits. The sound and the diseased roots can never be better separated than when the crop is ploughed up. They are far more easily distinguished at that time, and the unsound roots can be consumed on the farm or sent to the farina mills. Turning over and picking out the diseased in the pits is both an expensive and unsatisfactory process, as it rather encourages the progress of decay among those roots that are sound.

Mr. Mathews, under date of October 7th, in his report on the crops of the Carse of Gowrie, Scotland, for the *Mark Lane Express*, speaks of Turnips and potatoes, as follows:—

The turnips, upon which so much depends, not only of our meat supply, but also of our manure for another season, are generally excellent, except in some cases where "finger-and-toe" has prevailed. This disease, dangerously on the increase, is apparently due to two causes—the direct, and the probably indirect; the direct, a continuation and increase of the destroying insect, in consequence of the extended culture of the turnip (destroyers, as a general law of Nature, have powers of increase greater than the organisms they destroy, when these organisms become much extended, in order, apparently, to act as a balance, to prevent the unnaturally-great extensions of any particular family of organic life); the probably indirect, a consequence of the turnips becoming more liable to insect disease from some constitutional defect, the result of the ground having been soo much of late under turnips.

From the late showery wheather in England the turnips on the eastern and lower portion of that country, which from the great drought had been stunted and a good deal affected with the white mildew or blight, have improved considerably, while in the higher nothern and western portion of England, where the climate is naturally moist and better suited for the growth of this

root, they are as good as in Scotland. This must serve to prevent any further decline in the value of cattle during the winter, though it may lower them a little towards spring. Much, however, of the value of turnips depends upon the coming winter, and to make sure, wherever the turnips are well ripened and of large size, they ought to be removed and put in ridges similar to potatoes, and covered with plenty of straw. best wet straw, care being taken not to wound the bulb in cutting off the root or stem leaves, and especially not to cut these too close to the bulb, also not to bruise the buld in any way. Some farmers empty down the turnips from the coup-cart in a flat heap of unlimited length and breadth, but not more than 2½ feet deep, giving a cover of straw to the whole, so as to protect against frost, the access of the rain through the straw being found rather beneficial, while the stray becoming wet by the first shower retains them by evaporation in a cool condition. The writer has sometimes emptied the carts into a ditch, filling it to the brim, and covering the top with straw, taking care to stalk the lower end of the ditch so as the turnips could not swim away. Here the small quantity of running water passing through the turnips seemed to be serviceable in preventing rot.

To turn to the vexed and vexatious potato question, we notice that in this district the earlier and moister situated fields are the most affected with rot in the tubers. That the earlier are the most so, seems owing to these having reached, during the wet weather of the month of July and first half of August, a stage of ripeness when the vitality becomes weaker, and less able to withstand the corrupting influence of moisture, heat, and loose electricity; whereas the later were at that time stronger in youthful vigour, so as to withstand these aids of corruption. After the season becomes colder, the rot makes slight progress even in the field; and provided the tubers. after being gathered, are not protected from the cold, or themselves become heated or such a quantity of the unsound left mixed with the sound in the ridge-bin as to act as a barm-ferment to forward the corruption of the whole mass, they remain pretty sound till spring. Hence the bin ought to be narrow, well ventilated, with perhaps a cover of wet straw only for a time—till the approach of frost; the straw so placed as not to communicate any moisture to the potatoes below, or allow any rain to penetrate. In potato fields that I have examined this season, I have found the weak and sickly from poverty of soil, and the over luxuriant from over-richness of soil, both more affected with the blight than where the soil was of a suitable richness for a fair crop. In all cases I found the moister the position, whether in regard to soil or atmosphere, the rot was the worse. Last season I put your readers in mind to take the newly taken-up potatoes showing spots of rot at once to the boiler, if there was not a demand at the starch mill or for feeding cattle; and after cooking, to store them in pits of the ground, for feeding pigs during the winter, where the sour like the sauer kraut of the German; and be much relished if mixed with any broken grain, especially rye.

Coolness, short of freezing and dryness, is the best means of repressing the progress of the potato rot. The farmer ought to know and never forget the effect of evaporation and of clear-night radiation in producing cold. To convince him of the effect of evaporation, let him naked put on a wet shirt, and stand (not in the sun) in a strong current of air, in dryness above the dew point. The hoar-frost morning, not unfrequent in spring and autumn, and even in summer when the night is clear and still, though the previous day was warm sunshine, is an example to him of radiation producing cold. In India they dig shallow hollows about 18 inches deep and a few yards in dreadth, fill these about one-half with loose wet straw, and place shallow plates filled with water upon the wet straw; and in the morning, if the night was clear and still, the water in the plates is changed to ice, the joint effect of evaporation and radiation. Here the slight dug out hollow in which the evaporating straw is placed prevents the cooled air, however than warmer air, from spreading along the surface of the ground; it remains in the slight hollow as water in a cup. The farmer ought also to know the different capacities of the same substance in the solid, liquid and gaseous form for heat; that two pots of equal size, the one filled with ice and the other with water, the ice and water both about the temperature of 32 degrees—that both being placed upon the same fire, the water will boil as soon or sooner than the other will be raised one degree in temperature, only melted; and again, that it will take more time, that is more heat, to boil off the water into steam, the gaseous form, than it did to melt the ice; or to raise the water from 32 degrees to 212 degrees, that is from the melting to the boiling point. It appears that all other substances, like water, have a solid, liquid, and gaseous form.

Horticultural.

Culture of the Vine and Fruit Trees in Pots.

Mr. Editor.—A short time ago I observed in the *Journal of Horticulture*, London, England, from *The Boston Cultivator*, an article on the culture of the Vine in Pots. The writer very justly represents it as one of the most interesting, elegant and profitable branches of modern horticulture, when well understood and properly managed. He states, and I quite agree with him, that the culture of the vine in pots will be found as easy and simple as in a border, and better

suited to the circumstances and wants of the many. So sensibly aware am I of these facts, and of the many advantages that may be obtained by the adoption of such a mode, that I feel assured if some who have it in their power will try it, they will soon see the advantage, and be able to convince their neighbours of its utility, not only with the vine, but also with the peach, the nectarine, the fig, and all our finer fruits.

The system is largely and successfully practised in England, and to a certain extent in the United States. It is strange that it is so little thought of in Canada. Our climate is good, there are many wealthy gentlemen amongst us, many good and willing gardeners, let us begin in earnest,—we like good things as well as others, and why not have them. Such a thing will be found both pleasant and profitable.

Mr. Murray of Messrs. Bruce & Murray, Rosedale Nursery in this city, in a paper on the Orchard House read a few months past before the Horticultural Club here, afterwards published in your Journal; remarked that he hoped before many years passed over our heads that all the wealthy portion of our community would have their Orchard Houses, and not only they, but every Farmer, Merchant, and Mechanic would sit under his own vine and fig tree. Many I have no doubt would like to see this. I would advise Messrs. Bruce & Murray, who have put their hand to the wheel, to forward the example. This they can easily do by fruiting for next year's Provincial Exhibition, a few dozen of the fine Pot-vines and Peach trees I saw in passing through their nursery the other day, Might not the Society offer a prize for such a thing, I am inclined to think it would tend to much good. But to return to the thread of my discourse; good orchard houses are absolutely necessary for success, and profitable cultivation, but any one who has a vinery, green-house, or small pots, may grow a few plants and succeed very well. In Pot-culture much may be done in a small way, in a pit or frame erection under a few lights of glass. Some of our hardiest hot-house vines will answer very well with such treatment, there is no reawhy some of them might not be tried as Cottage Window plants. Both writers to whom I refer differ a little in their estimate of produce. In my opinion neither oversteps the mark, the one states that from under 500 square feet of glass, by pot-culture 500 lbs. of grapes may be produce; the other says for a young vine 5 lbs., of grapes, and for peaches two dozen of good fruit,—the latter I consider as under. In my own experience I have known vines two years old produce ten and twelve lbs. of good fruit, and three years old peach trees four dozen of peaches.

Yours, &c., Hortus.

Hamilton, Oct. 30th, 1851.

P.S.—Remember John Frost's mischief last winter and protect all valuable young trees.

Crystal Palace Gardens.

The terrace gardens and flower beds at this season of the year form one of the great attractions of the Crystal Palace. As the disposition of the flowering plants this season has excited unusual attention, it is anticipated that a short description of the various arrangements of the beds and parterres will be read with much interest. As is well known, there is a range of six fountains on the terrace at the Crystal Palace. These are surrounded with grass-plats, ornamented with hundreds of flower-beds. It is to these latter that attention is specially directed, and it may at once be stated that at no former period have they been more luxuriantly brilliant than at the present time, their appearance reflecting much credit upon the care bestowed upon them by Mr. Gordon, the Company' superintendent of the out-door gardens and park. The fountains nearest to the north and south wings are surrounded by rhododendron beds. The next pair of basins are encircled by chain beds of yellow calceolarias and scarlet geraniums, with margins of light variegated alyssum. The seven square beds of flowers forming the inner decorations of these clumps are made up with margins of blue lobelias and variegated leaf geranium, having in the centres purple petunias, orange tropoælums, yellow calceolarias, purple unique geraniums or intermediate stocks, yellow tropæolums, scarlet geraniums, or rose petunias—the whole presenting a most beautifully diversified appearance. The clumps around the central pair of fountains have each nearly forty beds, all in the most brilliant flowering order. Those around the auracarias have an inner and outer margin of white cerastrium, filled up with blue dwarf lobelia. The small standard acacias are encircled with beds of orange gazania splendens and tropæolum with variegated geraniums for edging. The long line of beds fronting the lower terraces produce, perhaps the most brilliant effect of all, having an outer broad margin of purple king verbenas, enclosing lines of christiana geraniums, with a centre of bright scarlet Crystal Palace geraniums. Looking along the length of the terrace, these present a superbly magnificent appearance. The intermediate beds around the pedestals of the marble vases and statutes are composed of geraniums of various foliage and colour. It would occupy far too much time and space to attempt a descriptionof the whole of the remaining flower-beds, but it would be a great omission not to notice the numerous parterres of regular and brilliant colour which line each side of the great walk leading to the central round basin. Disposed in straight lines, capable of being viewed from a slightly elevated position, they present the most charming contrast of colours. The margins are formed of variegated alyssum; with purple nosegay geraniums in the middle, they have cerise-unique geraniums on each side of them; these are again

bounded by two rows of purple king verbenas, having between them and the margins also two rows of orange tropæolum. The intervening circular beds have each in their centre a tall humea elegans, surrounded by various geraniums and blue lobelias. The numerous marble vases on the terraces are filled principally with scarlet geraniums, the slopes around and within the rosary being also brilliant with geraniums, calceolarias, verbenas, tropæolums, &c. This description may appear somewhat technical, but as at this season of the year much attention is bestowed on the decorations of gardens, it may not be without service to those who desire to cultivate the brilliant and beautiful effects of varied bower-beds to direct attention to those at Crystal Palace, which certainly at no former period were ever more deserving special notice.

Plant Potting.

To grow plants well in pots is no mean criterion of the cultivator's skill. At the exhibitions of our leading horticultural societies, fine specimens of plant culture are brought forward, but in ordinary practice, well managed plants are the exception rather than the rule.

The soil for potting is an important matter in this connection. What is termed a turfy-loam, is the basis of all composts for growing plants. Turfy-loam is a soil formed of decomposed turves that have been procured from an old pasture field; these turves should be thrown into a heap and watered with water in which a portion of potash has been dissolved, if rapid decay of the fibre is important. It is not desirable to reduce the vegetation to the last degree of decomposition; the fibry matter which it contains is the main element of growth; so that active vegetation in the grasses being destroyed it is in fit condition for use.

In selecting these turves preference should be given to old grass lands that have for many years been undisturbed; the grass roots will have formed a thick mat of vegetable matter, three or four inches in thickness; it should not be cut deeper, and if it will bear to be thrown about without breakieg, it will evidence a substance equal to the famed *peat* of European gardens. These turves are valuable just in proportion to the amount of fibrous matter they contain, and for all purposes of plant growing are superior to any combination of soils and manures that can be formed. Its open and porous character renders it capable of producing as well as absorbing a great amount of vegetable food. When water is given, it passes freely through the pores, retaining much moisture in suspension, lessens the repetition of the watering pot, and the nutritious elements are not leached out by constant watering. It is not well known that in a turfy-soil, such as the above, all kinds of green-house plants can be grown to great perfection. Plants grown in it are characterized by the deep green, healthy hue of their foliage, the early and well-ripened wood, and a profusion of large and highly colored flowers. This proceeds from the circumstance that there is no excessive stimulus, at any period of the plant's growth; hence its developement is regular—one of the most important points in all kinds of culture; the plant is not excited into a luxuriant growth of branches and foliage when young, as frequently occurs when the soil is rendered rich with nitrogenous mixtures, which retards maturation of the wood, induces disease, and is unfavorable to the production of flowers and fruit.

In preparing this soil for potting it should not be broken up too finely, and by using such correctives as sand, charcoal, &c., it can be regulated to suit any description of plant. Plants that are to remain for years without removal, should be potted in a soil well supplied with these correctives, so that adhesion in the soil after the vegetable matter has become decayed may, to some extent, be prevented. Weak growing plants will also require more than those that are robust.

The preparation of the pots as regards drainage is of much moment, and there is some diversity of opinion as to the amount of drainage materials necessary. Some writers assert that it is worse than useless to place an inch or two of drainage in the bottom of pots, as it allows the water to pass off too rapidly, and entails unnecessary labor in keeping a sufficiency of moisture in the soil. At first view this reasoning appears plausible; it is, nevertheless, a fact that well-drained pots, and a porous soil, will contain a more uniform and lasting supply of moisture, than when these conditions are reversed, because air is thus enabled to penetrate and hold water in suspension. It is an erroneous supposition, perhaps too prevalent, that drainage in reality renders a soil dry, so far as a complete abstraction of moisture is understood. Drains only carry away the water that is not retained by absorption, which otherwise would prove injurious. When pots are imperfectly drained, the soil shrinks in drying, and leaves the side of the pot, and when water is afterwards applied, it runs down between the soil and the pot, without penetrating to the roots of the plant. On the other hand, when water is applied on the surface of properly drained soil, it immediately percolates freely throughout the mass, and when it has absorbed all that it will retain the surplus passes away by the drainage. Both science and practice confirm the fact, that good drainage is the foundation for good cultivation.

The material most generally used for pot drainage is technically termed crocks, being pieces of broken pots that are otherwise useless. Those who are so fortunate as to have no broken or cracked pots, will find a good substitute in oyster shells and broken charcoal, bones, stones, bricks, &c. The oyster shell is laid over the bottom, and all the broken material laid over it

as desired; a small piece of perforated zinc laid over the bottom hole is a good preventive against the ingress of worms; which are sometimes troublesome when the plants are set out of doors. The amount of drainage necessary will of course vary with the size of the pot, and it will also be influenced by the kind of plant. An average depth of one, and a half inches to a six inch pot, will be sufficient for permanent plants.

Previous to removing a plant from one pot to another, the soil should be allowed to become rather dry, which facilitates the arranging of roots and handling of the plant. When the plant is turned out of the pot, and the roots appear thickly matted and interwoven, the old drainage should be carefully removed, and the roots gently disintegrated, so that they may be spread into the fresh soil; this treatment is more particularly applicable to Azaleas, Camelias, Epacrises, and similar plants, that may not have been very recently disturbed. Young plants of soft, free-growth, as Fuchsias, Geraniums, Lantanas, &c., should be re-potted as soon as the roots reach the sides of the pots, or at least before they become numerous and spreading, so that the plant may receive no sudden check in its growth. Many plants are kept comparatively dormant in winter, and the old wood cut down in spring to encourage a new growth; of such are Roses, Fuchsias, Geraniums, Clerodendrons, &c. They require to be repotted as soon as growth commences, and doing so the old ball of soil around the roots should be completely broken up, and a few of the strongest roots pruned back, to admit of being placed in the same or in a smaller pot; by this means a plant may receive fresh soil periodically, without using pots disproportionately large as compared with the size of the plant.

Another point worthy of attention is to use the soil for potting rather dry, and press it firmly in the pot, more particularly if placing fresh soil around an old ball of earth, which unless very tightly packed, will allow a passage for water, leaving the roots dry. If nothing harder than the fingers is used, there will be little danger of pressing the soil too firmly, if all has been in proper condition.

After a plant has been re potted it should receive a good watering at once, and be placed in a moist atmosphere for a few days afterwards, until growth is again established.—*Farmer and Gardener.*

Management of Orchards.

The following is from a premium essay on orchards, written by Dr. J. A. Kennicot for the Transactions of the Illinois State Agricultural Society. Though specially designed for a different section of the country, our readers will find in it points of interest and value:—

Cultivation.—Fruit trees need as much cultivation as corn and potatoes, and should have it, not for one year or five, but forever, or as long as they pay for it in fruit. But the cultivation should not be continued too late in summer, lest a late and consequently immature growth of wood should ensue. This caution is especially called for in relation to all tender-wooded sorts, like the peach and pear. You can raise any kind of hoed crop you please, among fruit trees.—Beans, potatoes, vines, roots, &c., best, and corn good, when not shading the young trees so much.

Never "seed down" a young orchard. Never let one of the forage "grasses" get a foothold in it. It is next to impossible to keep down "blue grass," and "June grass," when once established in an old orchard. Red clover is sometimes admissible to check a too luxuriant wood growth in deep rich loam. "Small grains" *never.* A crop of rye, barley, oats or wheat, is worse than "fire-blight" and caterpillars among fruit trees.

A shallow-running corn-plough "cultivator," and four-tined fork or pronged hoe, and common hoe, are the implements of cultivation. Keep the spade out of the orchard, and the large plough too, after the trees begin to bear.

Pruning.—As a rule, orchard trees need "pruning" as usually practised, about as much as a cow's horns, or a horse's hoofs need cutting! Most of the shaping should be done in the nursery, or during the first three or four years; at and after planting, as the trees attain size and a good shape, the removal of dead or diseased wood, and dense, unfruitful spray is about all the "thinning out" ever called for. "Shortening in" is quite another thing. You practise this on peaches, for example, to prevent leafless limbs, and keep them within reach; and on pears for the same purpose and to get a good form. Interfering branches, too, may sometimes be treated as dead wood, if they can be spared.

To *increase wood* prune, or "cut back," in autumn or early spring, during *dormancy* To *check* wood growth, and of course encourage a tendency to bear, pinch back or cut at midsummer. June and July are the best months for general pruning. Winter is always bad. *Autumn* is the time to prune grapes. Pruning is a surgical operation, and requires as much judgment, though not quite as much skill, perhaps, as animal surgery. Under some circumstances, a tree has less powers of resistance to amputations to man. And as the good surgeon deems a short limb better than none, a good orchardist should first see whether it is not better to save than to amputate—better to keep the pruning-knife in your pocket, as the surgeon leaves his amputating case at home till absolutely needed. But when necessary to cut—cut boldly and freely, and above all, promptly and well.

Manuring.—I have left this to the last, because it *is* the last thing to practise, except in rare instances, as driving sand, which may be

helped by clay, leached ashes and cow manure, and barren clay, seldom found, which, by thorough drainage and exposure to winter frosts by autumn ploughing, may be made good by early application of coarse stable or horse manure, peaty earth and like matters. Manuring, to sustain fruitfulness, is another thing, and is not much needed in most orchards west, till the trees have been years in bearing; and, as often given, at planting, it is a great damage, and sometimes death to fruit trees. When you manure bearing orchards, let it be in autumn; spread evenly, and plough under, lightly in spring; but be careful to place it where the roots are, not close to the stem, and avoid breaking roots when you plough.

Special manures are often of great moment, especially broken or dissolved bones, leached ashes, air-slaked lime, &c., &c.

Transactions.

The Provincial Exhibition,

Held at London, September 1861.

Reported by Mr. William O'Brien.

As the principal value of our Provincial Exhibitions is to be found in the means which they afford of testing the progress of the country in the various industrial pursuits which are there represented, the first consideration that naturally arises with regard to them may be thus expressed—How does the exhibition just concluded compare with those that have preceded it? In what respects does it surpass, and in what, if any, is it inferior? Another question, too, may be pertinently asked—Do the public at large continue to manifest by their attendance the same appreciation of the value of the exhibition, and the same interest in the progress of the different branches of agricultural and mechanical industry?

Correctly to answer the questions thus proposed, it is necessary to take a variety of circumstances into consideration. In the first place the locality of the exhibition will largely affect the number of exhibitors as well as of visitors. The latter of course will always depend to a great extent upon the means of access to, and the accommodation at, the place of exhibition. But with reference to the articles exhibited it will always be found that in one section of the country particular classes will attain a prominence which they will not reach elsewhere. No where, indeed, but in the old settled parts of the country are the more valuable and expensive breeds of cattle cultivated to any extent, or manufactures largely carried on, and therefore the further removed is the place of exhibition from the centres of population the fewer in number and less in value will be the articles exhibited. The quantity and quality of agricultural productions will also be much affected by the seasons, as well as, especially as regards fruits and vegetables, by the climate which prevails in the neighbourhood of the show. Low prices again, and depression in business affairs, will seriously operate against a large attendance, while on the other hand anything that gives additional interest to the occasion will as largely contribute to its success.

Now with reference to the exhibition of 1861 it will be found that so many adventitious circumstances of a depressing character have been combined that the success which actually did attend it is a very striking proof of the steady progress of the country in the main elements of agricultural prosperity. Much as our western friends may boast of the rapid growth of their portion of the Province it is evident that, with a few exceptions, the locality of the show was rather beyond the limits within which our principal breeders are to be found, and to this cause we presume that we must attribute the fact that Durham cattle did not, on this occasion, manifest their usual superiority over all other breeds, while, on the other hand, the large exhibition of working cattle and grades gave evidence of a less advanced stage of agricultural progress. Then the display of grains, roots, vegetables, and fruit was painfully deficient as compared with last year. This, however, must not be taken to argue that in these important respects there has been any falling off in our mode of cultivation. It is rather to be attributed to the fact that the present season has been as unfavourable for the production of these articles as the last was eminently the reverse. That the sample of wheat this year is in general far inferior to that of last year appears to be now admitted on all sides, but that so meagre a display would be made in other cereals certainly seems to argue a deficiency somewhere. With regard to fruit, locality as well as season combined to give the show at Hamilton a degree of pre-eminence very desirable under the circumstances, and it may possibly be years before we again see a combination equally happy. The same remark is perhaps applicable to a certain extent to the show of roots, which compared very

unfavourably with that of last year; but still the County of Middlesex alone should have been able to make a better display.

So far as the interest taken by the public in the exhibition may be judged of by their attendance thereat there was certainly no reason to complain, especially when we consider the numbers that were brought together last year at Hamilton by the unusual eclat given to the occasion by the presence of His Royal Highness, the Prince of Wales. And yet there can be no doubt that this year the number of visitors would have been even much larger than it was had a more liberal scale of fare, been adopted by the railway companies. The reduction should have been at least one-half instead of one-fourth; and, considering how largely the companies are indebted to Provincial aid. on an occasion of this kind a little more liberality might have been expected as a matter of policy if not of self-interest.

But while thus pointing out the particulars in which, in an agricultural point of view, the only one in which it is our province to regard it, the last exhibition was deficient as compared with that of the previous year, it is but fair to mention those in which it equalled, if it did not surpass it. Of the large display of working oxen we have already spoken. Of Durhams, the display, as before remarked, was not so large as we should have expected; yet, as to quality, it was excellent. Herefords, owing to Mr. Stone's late importations, were placed upon an entirely new footing. Ayrshires were better than we have ever seen them, both as regards number and quality. Galloways did not show any great improvement. But of Devons the show surpassed anything we have ever seen. This again was a good deal due to the locality, Mr. Locke, the principal exhibitor of this breed, residing near London. Mr. Locke and Mr. Pincombe, another breeder living in the same neighbourhood, brought seventy head upon the ground between them. The show of sheep was fully equal to any we have previously had, and in the short-woolled class perhaps better. The show of pigs was also unquestionably the best that we have ever had, every variety being more fully represented than on any previous occasion.

The show of implements was also very good, evincing a steady improvement in that useful branch of mechanism.

Upon the whole, therefore, it may be concluded that, with the exceptions alluded to above, the agricultural portion of the show was superior to any which have preceded it, and that as those exceptions are owing in a great measure to circumstances beyond the control of the farmer, the Association have no reason to be dissatisfied with the result. That it should have compared favourably at all with last year is indeed almost more than we ventured to anticipate, considering the unusual efforts that were then made in consequence of the expected presence of the Prince of Wales, combined as those efforts fortunately were with the most bountiful season that we had known for years. One remark may here be appropriately made, viz: that in almost every class there was this year a very remarkable disproportion between the number of entries made, and the number of articles actually exhibited. Thus in grain the number of entries was nearly as great as that of last year, while the number of specimens chosen was less by one-half, and the same thing, though to a less extent, was observable all through. It is evident, therefore, that a mere enumeration of the number of entries gives but a very uncertain criterion of the nature of the exhibition. It appears indeed to have become a custom with a certain class of people to make trifling entries of articles which they have no intention of showing, merely for the convenience of having an exhibitor's ticket.

The exhibition grounds, though not so picturesque as those at Hamilton, were equally commodious, and within a reasonable distance of the railway stations. A sheet of water, occupying the northern extremity, was found very convenient for the use of the stock, and the sheds for the cattle were as good as any that have yet been provided. On this subject, however, we shall have something to say hereafter. The main building is in all respects creditable to the people of London. It is of an octagonal shape, the area on the ground floor being upwards of 24,000 feet, the galleries giving an additional space of 4,000 feet. The external wall is of white brick, 21 feet in height. The second tier of wall is of wood, and rises to the height of 32 feet above the ground, including the pitch of the roof of the exterior part; within this second tier are the galleries. The third tier within this again, which is a continuation of the inside gallery wall, and also of wood, rises ten feet higher, and above this again is a cupola, which

brings the entire height of the building to something under 100 feet. The whole cost was under $9,000. The ground floor was occupied with grain, seeds, and manufactures of a bulky nature, the gallery being devoted to ladies' work, fine arts, and other light articles. The roots and garden produce were stored outside in a large tent erected for the purpose. The horse boxes and a portion of the cattle stalls were erected against the fence on the eastern side. The remainder of the cattle sheds and the pens for sheep and pigs were in rows running east and west in the same portion of the ground.

With these remarks upon the general character of the exhibition, we shall now proceed to give an account in detail of the articles especially worthy of notice in those classes in which farmers are more particularly interested, commencing with the live stock, and giving, as is meet, the most prominent place to that noblest of quadrupeds—

THE HORSE.

There is nothing in a show of this kind so difficult to report upon, with any degree of satisfaction, as the horses. In the first place, they are either confined in stalls carefully locked up, except when the groom is in actual attendance upon them, or they are being exhibited in a ring, when it is no easy matter to obtain any precise information respecting them. In this instance the show of blood horses was so extremely poor that the less said about them the better. Dr. Morton's imported horse "An onio," a full description of which was given in the *Agriculturist* of 1860, unfortunately died at the commencement of the season, and we have heard of no fresh importation capable of supplying his place.

The display of saddle and carriage horses in the ring was very large, and attracted a great deal of attention. The show included some nice animals of both kinds, useful as well as ornamental. To my mind, however, the "sulky" and the trotting horse are too suggestive of all that is vulgar and disreputable to be at all in keeping with a sober agricultural show, or even a well-conducted racecourse.

The show of stallions in the agricultural class was considered by the judges to be extremely good as compared with former years, the entries were numerous, and the animals had, in great perfection, that combination of size, bone, and activity which is so desirable in a useful farmer's horse. The first prize in this class was taken by T. Gowland, of York, in the County of Haldimand.

A good coaching horse has long been considered a desideratum in this country, and though several importations have lately been made with a view of supplying the deficiency, we are not aware that it has been done as yet with entire success. However that may be, the animals shown in this class have been steadily improving, and the show at London was exceedingly good. There is something singular in the way the prizes were awarded in this class; the third prize four-year old stallion took the diploma as the best stallion of any age, while the first prize four-year old was again successful in obtaining the prize of $60 offered by the Prince of Wales as the best stallion for general purposes!* This animal, which, after being thus singularly beaten by the third prize, after he had himself taken the first, was so fortunate as to be again successful in competing for the most valuable prize of the whole exhibition, was owned by Mr. J. Armstrong, of Union, near London

The show of heavy draft horses was good in proportion to other classes. The first prize was taken by Mr. R. Ferris's imported Robin Hood, a magnificent animal, and wonderfully active, for his weight. Mr. George Miller's imported Clydesdale fillies also attracted much attention.

HORNED CATTLE.

Short Horns.—The whole number of Durhams exhibited did not much exceed 80, although the list of entries was much larger. F. W. Stone, Esq., of Moreton Lodge, Guelph, was, as usual, one of the principal exhibitors. To his bull, "Third Grand Duke," the first prize was properly awarded, first in his own class, secondly as the best Durham bull of any age, and lastly as the best bull of any breed. Grand Duke is a very showy animal, of the style which has now taken precedence of all others, and combining in a remarkable degree the qualities for which this breed is remarkable. Mr. Stone also exhibited four cows, one of which, "Desdemona," took the first prize in her class; one yearling bull, two yearling heifers, and two heifer calves, all of which took prizes in their re-

* This is accounted for by the 1st and 2nd prize horses not having been entered for the diploma.—Ed.

spective classes. These are all animals of the very highest class, both in point of breeding and good quality, and would be worthy of a place in any agricultural show in the world.

Mr. George Miller, of Markham, another of our principal importers, and indeed one of very earliest, and to whom our farmers are largely indebted, was also an exhibitor in this class, as well as in a number of others. His bull, Prince of Wales, which took the first prize at Hamilton as a two year old, is a beautiful animal, although this year he reversed places with Mr. White's "Milton," which took the first prize, having taken the second last year. Mr. Miller's two cows were also successful in their classes as was also a very nice heifer calf belonging to his herd.

Mr. John Miller, of Brougham, was deservedly awarded the first prize for his yearling bull, and the second for his bull calf, both of them, the yearling especially, being animals of first rate quality.

One of the finest animals upon the ground, though of a style that is now considered somewhat out of date, was the three year old bull already alluded to, belonging to Mr. James White, of Bronte, County of Halton, which took the first prize in his class. Mr. White also took the first prize for a fat ox, a short horn grade, a monster weighing 27 cwt. as he stood, a noble animal of his kind, and one that will cut up well at Christmas, for the benefit, we trust, of our St. Lawrence market.

Mr. J. Snell, of Edmonton, Chinguacousy, had a good two year old bull, the first prize bull calf, and some nice heifers, all well bred and of good quality.

Among the cows of this class, one of the most remarkable, though by no means the handsomest, was one shown by Capt. Shore, of St. Thomas; the width of this creature, across the hips was something marvellous and her size altogether was uncommon, even for a Durham, still she was too coarse for the eye of a breeder, although the judges did place her next to Mr. Stone's Desdemona.

Two cows shown by Mr. Welford, of Woodstock, displayed excellent breeding, and one of them, in our opinion, was deserving of a better place than she obtained. They were not very large, but had all the points of the Durham in perfection.

To the gentleman whose name we are now about to mention we perhaps owe an apology, for not having spoken sooner of the valuable addition which he has made to our thoroughbred stock. We allude to Mr. G. H. Phillips of Prescott, whose recent importation of Shorthorns from Ireland, the first that have come from that portion of the empire, is one of the events of the year. Two of Mr. Phillips' cows are really very fine and his whole herd is of superior quality. Among other exhibitors in this class we may mention A. Hogge, of Guelph, G. Black, of St. Mary's, J. Anderson, of Guelph, John Iles, Guelph, and G. Robson, of London.

It was not till Wednesday morning that the prizes in this class were decided, and in some of the classes the contest was very keen. This was especially the case in that for the diploma for the best bull of any age. Several animals were sent into the ring, but all were soon dismissed except Mr. Stone's "Grand Duke," Mr. Miller's "Prince Albert," and Mr. White's "Milton." The Judges were evidently much divided, and it was some time before they came to a conclusion. It was indeed no very easy task, as the three animals were very perfect, though somewhat differing in style. At last, however, the decision was made in favour of "Grand Duke."

For the herd there were only three entries, Mr. Stone's, Mr. Miller's, and Mr. Phillips'. But Grand Duke, Desdemona, and the prize heifers, formed a combination perfectly irresistible, and no difficulty was made in adjudging the prize in their favour.

Devons.—Next to the Durhams, in general value and importance, though at this show exceeding them in number, come the Devons. Of this breed we reckoned over ninety head.

W. H. Locke, of Yarmouth, is well known as the principal exhibitor of this breed, and, being so near at home, he was able to display his herd to the best possible advantage.

His entries numbered some forty, including two very fine bulls, and an infinite series of females, from the great-great-grand-dam of the herd down to calves of a tender age. Mr. Locke very wisely eschews pens and sheds, and his cattle, standing together in some conspicuous part of the ground, make a sight of never ceasing attraction.

Next to Mr. Locke, his neighbour, Mr. Pincombe, a name hitherto unknown in our prize list, deserves to be mentioned. Mr. Pincombe made his *debut* with no less than thirty head, chiefly bred from stock purchased from Mr. Locke. In Mr. Pincombe's hands they certainly have not degenerated. A heifer calf of his is the finest animal of the

breed that we have ever seen. In the classes for cows and heifers, Messrs. Locke and Pincombe divided most of the premiums between them.

Mr. Courtice, of Bowmanville, is another Devon breeder of note, and his stock, though not large, is excellent.

Mr. Tye's cattle we were glad to see this year in very much improved condition, and they deservedly carried off several prizes. His stock are of an excellent strain of blood, and, though not large, only want a little better feeding to place them in the very first rank. Some of his heifers this year it would be hard to beat.

Mr. Mason, of Nissouri, showed two very nice bulls, and among other exhibitors we may mention C. A. Woodhull, of Komoka, C. Beer, of Katesville, and S. Peters, of London.

Mr. Rykert, of St. Catherines, we are sorry to say, was not an exhibitor this year.

The valuable herd that used to belong to Mr. Ferrie, of Doon, has, we regret to learn, been broken up since the last exhibition.

Herefords.—The enterprise of Mr. Stone in importing a bull and eight heifers of this valuable breed will, it is to be hoped, prevent it from falling entirely out of use as as one time appeared likely to be the case. For some time past the specimens of Herefords exhibited have been so poor as to give the public a very unfair idea of the real merits of the breed. Mr. Stone's cattle, however, are of the best quality, one of his heifers having taken the first prize at the exhibition of the Royal Society, held last year at Canterbury. Their compactness of form, neatness and elegance of shape, cannot fail to strike the eye of the most casual observer, and as, perhaps, the most profitable breed for the butcher, they can scarcely fail of being fully appreciated. As a cross upon the common cattle of the country there is nothing better, and certainly nothing so durable in its effects as the Hereford.

Mr. McMicking, of Stamford, and Mr. H J. Lawry, of Hamilton, were the only other exhibitors of the breed; Mr. McMicking's cattle are very much improved upon what he has shown lately, and made a very creditable display.

Ayrshires.—This breed showed a very great improvement over last year, both in the number and quality of the articles exhibited. Mr. Wright, of Cobourg, was, as usual, out in great force, and his stock, if anything, more attractive than we have ever seen it before. Two of his cows, in particular, were pictures of elegance and symmetry, and by no means deficient in size. The milking qualities of this breed are unquestioned, and in point of size they are capable of attaining greater weight than is generally supposed.

Mr. Morton, of Gananoque, is also a large exhibitor, having some thirteen head, including three fine cows, some nice heifers and bull calves. This lot had just returned from the New York State Fair at Watertown, where they carried off a large number of prizes.

The stock of R. L. Denison, Esq., the treasurer of the Association, was well represented, and included a number of very fine animals, of excellent style and breeding, and in much better condition than they were last year.

Mr. Staunton, of St. George's, had four head of nice cattle. Mr. W. H. Essery, of Avon, and H. G. Frank, of Strathroy, were also successful exhibitors.

The first prize for aged bulls was taken by Mr. Nimmo, of Clarke's Mills, Camden East, although the diploma for the best bull of any age was awarded to a yearling belonging to Mr. Wright, who also obtained the prize for the best herd.

In striking contrast to the animals we have been describing was a cow just imported by S. Beattie, of Woburn, a diminutive animal of apparently a totally different strain, very pretty, but very small; too small, we should imagine, whatever her breeding may be, to find much favour in this country, where size is, too much perhaps, regarded as the most essential quality in all breeds.

Galloways.—The show of Galloways, if not superior to that of last year, was sufficiently good to prove that there is no diminution in the growing popularity of this excellent herd. We notice the importation of a lot of six new animals by Mr. George Miller, all of the best quality, which took several prizes.

Mr. John Snell, of Edmonton, was one of the principal exhibitors, and his herd was successful in obtaining the prize against strong competition.

J. Roddick, of Brantford, one of the earliest exhibitors in this breed, had a number of entries. Mr. Fleming, also of York, another of the introducers of Galloways, displayed

some fine animals. Both of these breeders were very successful in the way of prizes.

Among other exhibitors we may mention Mr. Graham, of Woodbridge, Mr. Kerr, of Westminster, Mr. Lyons, of Flamboro, and Mr. Jardine, of Saltfleet.

Mr. J. Nimmo, of Camden East, had a fine lot of cattle somewhat resembling the Galloways, of what we believe are called the Polled Angus or Aberdeen Breed, which the judges deemed worthy of being placed in a separate class by themselves, and therefore they did not appear in any of the prize lists published at the time of the show.

Another extra entry was made by Mr. L. Curry, of Belmont, of a lot of West Highland cattle, which he obtained, we believe, from Captain McLeod, of Drynoch, Yonge Street, near Toronto, by whom they were originally imported. The breed is very small, though heavy in the carcass in proportion to their height, and exceedingly hardy. For general use they are too small, but the new settler might find them very useful from their power of enduring hardship.

Grades.—The show of Grade cattle was very large, though nothing extra in point of quality. Some of the heifers shown were very fine, though not equal to some we have seen in former years. A. Hogge, of Guelph, S. Baker, of Simcoe, T. Stock, of East Flamboro, S. Peters, of London, and J. R. Pettit, of Grimsby, were the principal exhibitors.

The Fergus Cup presented by the Hon. Adam Fergusson, was awarded to Mr. Thomas Stock, of East Flamboro.

Fat and Working Oxen.—Of one of the prize fat oxen we have already spoken, viz: that belonging to Mr. White of Halton. Two other very fine beasts were shown by J. O'Rourke, of Shakespeare. The first prize for the fat cow was taken by W. Elliott, of Kingston, for a very neat well fed animal; and the second by J. Pearce of Tyrconnell.

The show of Working oxen was, as before remarked, exceedingly good. The Townships of London and Westminster each sent a team of ten yoke. The London cattle were large and heavy, but better suited for stall feeding than for the yoke. Those from Westminster were not so heavy, but younger, and altogether a better lot of working cattle, and to them the prize of £10 was properly given. Among the Devons exhibited there were some splendid specimens of working oxen, but several among the others shown should not been sent in at all. It may be remarked, however, that the cattle shown as working oxen were *bona fide* such, and not merely made up for the chance of a premium.

Best Bull of any Breed.—One of the most interesting things in the cattle department was the show of bulls entered in the sweeptakes to be given to the best bull of any age or breed. The competitors were numerous, and with the exception of the Herefords all the breeds were well represented, and their various qualities excellently contrasted. x Durhams, two Devons, six Galloways and three Ayrshires entered the lists, and a very pretty sight they made. Some discussion we understand took place between the judges as to the grounds on which their decision was to be given, whether the prize was to be given to what they claimed the best animal, taking breed into consideration, or to the most perfect animal of any breed, but without bringing the relative merits of the different breeds into the question. The latter appears to us the rule most in accordance with reason and with the terms upon which the prize was offered; but the judges, we understand, took the other view. At all events they gave the prize to Mr. Stone's "3rd Grand Duke," a decision which we should be very sorry to impugn.

THE SHEEP.

Cotswolds.—The popularity of the Cotswold certainly shows no sign of decline. The number of entries was large and the show of excellent quality, and, which is a much better test of the estimation in which the breed is held, we have heard of a number of sales of rams to farmers in all parts of the country. The prizes, however, were principally divided between two breeders, Messrs. Stone and Snell. Mr. Stone's show of Cotswolds was as usual very large, the animals he exhibited being chiefly of that breed, Mr. Snell's show of sheep was larger, numbering sixty seven altogether, including Cotswolds, Leicesters and other long-woolled varieties, chiefly Lincolnshire. We may mention here, that among Mr. George Miller's importations this year, there were eight Cotswolds. His other importations of sheep we shall mention in due course.

Leicesters.—In this class, as well as in other long-woolled varieties, Mr. Snell was a large exhibitor and took several prizes. Mr.

John Miller of Brougham showed six rams of different ages, besides fourteen ewes, and Mr. George Miller's name appears again as an importer of twelve new specimens. Simon Beattie, of Woburn, who though but a young man and a young breeder, made an excellent display this year, was also a prominent exhibitor in this class. A number of prizes were taken also by Mr. C. Walker of London, whose sheep were very much admired. Mr. John Long of London was another importer. But, in the opinion of many, the purest and best Leicesters on the ground were a couple of rams shown by Mr. Stone, out of a magnificent lot of thirty-one which had arrived only a week before direct from one of the first English breeders. These sheep, which we have since had an opportunity of seeing, are well worthy the attention of all who wish to get a really pure Leicester, free from any intermixture of Cotswold, Lincoln, or any other long-woolled variety.

Cheviots.—The show of Cheviots was enriched this year by the addition of a new lot of very fine ones just imported by Mr. George Miller. The other exhibitors were Messrs. Dickson of Orono, D. Elliott, of Strabane, and T. Guy, of Oshawa.

Other Long Woolled Sheep.—In this class, which contains an *omnium gatherum* of all sorts of long-woolled varieties, there were a number of entries, including several Lincolnshire, Teeswater, and crosses of various kinds. Some of the animals in it were very fine, and the class is a valuable one, as enabling exhibitors to put forward a number of specimens which they could not legitimately enter in any other way except as extras, which is a very unsatisfactory mode of entering. Mr. Snell was the principal exhibitor in this class, but Mr. John Miller rivalled him successfully in several instances.

Southdowns.—No breed has made greater advances in a short time than the Southdown, of which the show this year was exceedingly good, and larger than any we have ever had before. The principal feature this year was the exhibition of two shearling rams from the flock of the celebrated Jonas Webb, bought at the closing sale of that great breeder by our enterprising friend Mr. Stone. Both of these animals were a good deal out of condition, but a little examination showed them to be very superior. Some nice ewes were shown by J. Maxwell, of Paris, and J. Peers, of Woodstock, and some fine lambs by Mr. Dickie, of Dumfries. Mr. J. Spencer, of Brooklin, however, was, as usual, the largest and most successful exhibitor, but we do not think that his sheep have been improved lately, a fact which is owing probably to a slight intermixture of Hampshire Down blood. Mr. Milne, of Markham, was another of the principal exhibitors in this class.

Merinos and Saxons,—Both the French and the Spanish Merinos were well represented, the former by Mr. Rymal and Mr. Young, of Wentworth, and the latter by Mr. Arkland, of Oshawa, and Mr. Miller of Grantham. In the opinion of the judges, however, the Spanish Merinos shown by Mr. Arkland, many of them, we believe, lately imported from Vermont, carried off the palm. They were in fact declared by the judges to be of very superior quality.

Other Short Woolled Breeds.—In this class which answers to the corresponding class in the Long woolled breeds, were shown a number of excellent sheep, chiefly Hampshire Downs, and crosses between Hampshire and Southdown. Among these, as among the Southdowns proper, there was pretty strong competition. The chief exhibitor of Hampshire Downs was Mr. Spencer, who carried off most of the prizes. Mr. Tye of Wilmot had several sheep of a similar kind, though not so good. To show well, the Hampshire Down requires to be in very good condition. Besides these there were two lots of a new description, the Shropshire Down, recently imported, one by Col. Brearley of Woodstock, and the other by Mr. George Miller. Between these two there was a great deal of difference, the latter being superior in size and in the quality of the wool. Mr. Miller's sheep are a little larger than the Southdowns, with longer wool but not so fine, though more lustrous. As these sheep are quite new to us we cannot say much as to their merits, but, judging from those chosen by Mr. Miller, we should not consider them so valuable a breed as the South or Sussex Down, or perhaps as even the Hampshire Down.

PIGS.

The show of pigs was certainly one of the redeeming features of the exhibition, and was unquestionably the best that we have had for many years, nor was the improvement confined to any particular class, large; small and middle breeds equally partook of it. The

Yorkshires were better represented than we have ever seen them, and as akin to them we may notice two fine sows just imported by Mr. G. Miller, which he calls the Cumberland improved. They are very large, white, and with fine skins. Of Yorkshires the principle exhibitors were S. H. Reeve of Derry West, C. A. Jordison of Belleville, and Messrs. Long & Kent of London. Of the large breed of Berkshires there were also some fine specimens, the chief exhibitors being J. Collins of Mount Elgin, S. Baker of Simcoe, and Jordison of Belleville.

In the class for "all other large breeds" besides those above mentioned, there were some very fine animals shown by J. Black of St. Thomas, J. Barns and J. Brady of the same place. Of the small breeds the principal varieties were the improved Berkshire, which appeared to be the most popular, the Suffolk, which was also well represented, and the Essex. In all these classes were many specimens worthy of the highest commendation. Of the Suffolk breed the principal exhibitors were J. Main of Peel, and J. McGlashan of Welland. Of Berkshires T. Penton of Paris and D. Buchan of Toronto. Of Essex Mr. Tye of Wilmot.

Before concluding our notice of the live stock we cannot help remarking that though the tendency to excessive feeding, pretty strongly developed in some quarters, has not yet reached very extreme limits, there is a tendency afloat now more deserving of reprehension—that of seeking to obtain size and weight in the animal by experimental crosses rather than by the more legitimate mode of developing the qualities of the original breed. If a man wants a large animal, whether it is a sheep, a pig, or an ox, if mere size is his great object, let him at once adopt a large breed, of which there are varieties to suit every fancy. Instead of this too many try to attain this object by crossing one breed upon another, the almost invariable result of which is to lose the distinctive characters of each, and in all probability to lose all their most valuable qualities. In some cases one cross for the butcher is all very well, but beyond this every every year's experience of our Provincial Shows proves the system to be a bad one. We have seen several instances in which a realy valuable flock has been quite ruined for breeding purposes by this process, and the breeder has been compelled to go back at considerable loss to the original stock with which he commenced. A small breed are valuable because they are small, and therefore easily kept and quickly fattened, and a large one because they are capable of attaining to a great weight; these respective values being ruled by the nature of the country for which the animal is required, and therefore the attempt to mix the two at once defeats the object in view, besides destroying the purity of blood, without which no breeding can be successfully carried on.

(*To be continued.*)

Miscellaneous.

Scotch and English Terriers.—Of these varieties Richardson gives the following description :—

The Scotch Terrier.—There are two varieties of the common Scotch Terrier. One which stands rather high on his hind legs, is usually of a sandy-red color, and very strongly made—he stands about eighteen or twenty inches in height, and is commonly called the "Highland Terrier." The other is lower, long-backed, and short-legged; hair more wiry, but not so long as in the former; mouth also not so broad, and muzzle longer. This latter variety is the dog celebrated by Sir W. Scott as the Pepper and Mustard or Dandie Dinmont breed.

The Skye Terrier.—So called from its being found in the greatest perfection in the Western Isles of Scotland, and the Isle of Sky in particular, somewhat resembles the preceding, but is even longer in the body, lower on the legs, and is covered with very long, not coarse hair; its ears are erect, and tufted at the extremities. All the Scotch Terriers are "varmint" in the extreme, being equalled by no other dog in the ardor with which they hunt and destroy the rat, cat, weasel—in fact anything that has *fight* in it; and, lacking other game, they will gladly and fiercely engage in combat with each other.

The English Terrier.—A light, active, and graceful little dog, usually of a black and tan color—and those of this tint are the best—but sometimes white. If black and tan, they should not present a speck of white; and if white they should be entirely of that color.

The English Terrier is, in combat, as game as the Scotch, but less hardy in enduring cold or constant immersion in water. It appears most probable that the rough or Scotch breed was the primitive stock, and that the smooth or English varieties are the result of artificial culture.

Winter Fruit, to keep well, should remain on the trees as long as frost will allow, then remove to some dry shelter for a time, before packing away in cellar or pit.

FOR SALE.

A FEW PURE-BRED SOUTH-DOWN RAMS and Ewe Lambs, from

IMPORTED STOCK,

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,
Brooklin, Post Office,
Oct. 12th, 1861. Ontario County C. W.

AYRSHIRE BULL FOR SALE.

MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,
Dover Court.

Toronto, Aug, 1861.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES,

FOR UPPER CANADA,

Is Published on the first of every Month,

AT $1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

FOR SALE.

A LOT of thorough bred ESSEX PIGS,—bred from recently imported 1st prize animals, and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

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VETERINARY SURGEON.

ANDREW SMITH, LICENTIATE of the Edinburgh Veterinary College, and, by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces, that he has commenced his profession in Toronto, and for the present, may be consulted either personally or by letter, on diseases of Horses, Cattle, &c., at the office of the Board of Agriculture, corner of King and Simcoe Streets; or at Mr. Bond's Livery Stables, ShepherdStreet.

Toronto, Octoner 3, 1861.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the GovernmentHouse. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Toronto, 1861. *Secretary.*

The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

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Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretaryof the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, NOVEMBER 16, 1861. No. 22.

Kohl Rabi.

This plant, sometimes called the cabbage turnip, is extensively cultivated in Europe, and in many situations enters with other root crops into the regular rotation of the farm. In Canada it is but little known, and we should like to be favored with the opinions aud results of those who may have given it a trial.

Messrs. Lawson, the well known Seedsmen of Edinburgh, recently communicated a very valuable paper on the culture and uses of Kohl Rabi, to the journal of the Royal Agricultural Society of England; and we make the following general summary of the contents of the paper as to the various points to be noticed in the cultivation, properties and general management of the plant; requesting our readers to keep in mind that what is therein contained applies to the climate and season of Great Britain.

1. There are eleven varieties of Kohl-Rabi in cultivation; some of which are supposed to be modifications of the others.

2. All soils appear to be suited to its cultivation, but it prefers heavy lands, even those appertaining to stiff clays, and it can be grown where turnips cannot.

3. The soil should be in fine tilth, well worked, and farm-yard manure plowed in during the autnmn; and in the spring it should be well worked and pulverised.

4. It requires heavy manuring; phosphate manures, with common salt added, are most suitable for it. Peruvian Guano, and other nitrogenous manures, should be avoided.

5. The seed should be sown in beds at the end of February or early in March, in drills 12 inches apart. A bed 6 yards square will afford sufficient plants for one acre of land, and eight ounces of seed will be necessary for the seed bed.

6. For successional crops, three sowings may be made, the first early in March, the second during the second week of April, and the third the first week in June.

7 Transplanting to the drills should be commenced the first week of May; but as a general rule, the plants should not be removed till they are from 6 to 8 inches high.

8. Plants for the main crop should be dibbled in at 18 inches distance. If successional crops are transplanted, the first (in May) should be 18 inches, the second (in June) 16 inches, and the third (end of July or first week in August) 15 inches apart.

9. If the seed is sown at once in the field in drills, the operation should be performed about the middle of April, but not later than the end. About 4 pounds of seed will be required for an acre.

10. Drills should be 27 inches in width, and plants should be singled to 14 inches.

11. While growing, the horse-hoe must be kept in continual requisition, until the spreading of the leaves prevents the operation being performed.

12. The *average* weight per acre is in Eng-

land from 26 to 30 to tons; in Scotland, 20 to 25 tons; and in Ireland from 30 to 35 tons.

13. Every description of stock will eat the Kohl-rabi, with avidity. In consuming the crop, sheep may be folded on the ground; but if given in the yard to cattle, the bulbs should be sliced or pulped; for pigs they should be steamed or boiled.

14. For cattle and horses it affords valuable nourishment when boiled with grain.

15. For milch cows it is invaluable, giving to milk and butter none of that disagreeble flavor which results when animals are fed on turnips

16. For lambs and ewes it is as fine food as they can have in March and April; and when the ewes are lambing, it is found greatly to increase the supply of milk.

17. Kohl-rabi is, so far as at present known, subject to no diseases, except "clubbing" and "anbury."

18. If hares or rabbits exist in the nighborhood of the crop, they are sure to prove very destructive, unless means of precaution are taken.

19. The leaves are of equal value with the bulbs in nutritive properties.

20. The plant, for feeding purposes, is twice as valuable as ordinary turnips, and materially surpasses the best Swedes in point of composition and feeding value.

21. It bears transplanting better than any other crop, and is invaluable, therefore, for filling up blanks in turnips, Swedes, or potatoes.

22. The Kohl-rabi can withstand any amount of drought in well and deeply cultivated soils, if the transplanting has been successful.

23. The most intense frosts do not seriously affect it, and therefore it stands the winter well, and affords good food even to the end of spring.

24. Its advantages over the Swedes are, that cattle, and especially horses, are fonder of it; the leaves are better food; it bears transplanting better than any other root; insects do not injure it; drought does not prevent its growth; it stores quite as well or better; it stands the winter better; and it affords food later in the season, even in June.

With such valuable properties, the Kohl-rabi well deserves a fair and extensive trial in this country, where, should it prove successful, it would be of the greatest advantage to our farmers in sustaining their stock through our long and severe winters.

International Exhibition, London, 1862.

The following is a copy of the circular recently issued by the Commission for Canada. The Commissioners consist of Sir W. E. Logan, Director of the Geological Survey, Chairman; The Hon. L. V. Sicotte, M. P. P., St. Hyacinthe, President L. C. Board of Agriculture; Col. Thomson, Toronto, President U. C. Board of Agriculture; J. Beatty, Jr, Esq., M.D., Cobourg, President U. C. Board of Arts and Manufactures; J. C. Tache, Esq., M. D., Quebec; B Chamberlin, Esq, B.C.L., Montreal, Secretary L C. Board of Arts, &c.; J. B. Hurlburt, Esq., LL.D, Hamilton.

Quebec, 15th November 1861.

The Provincial Commissioners appointed to secure a representation of Canadian products in the International Exhibition, to be held in London in the summer of 1862, take the earliest opportunity to make known to the public that they have this day been informed that the sum of $6,000 has been placed at their disposal by the Provincial Government for that purpose. They are authorized, out of this sum, to pay the freight and charges on all articles approved by the Commissioners for transmission to London, but are not authorized to purchase any manufactured products.

Parties desirous of exhibiting articles of Canadian produce will please make application (post-paid) to the Commissioners through me, on or before Wednesday the fourth day of December next.

Articles intended for exhibition must be prepared to be sent in, on or before the 15th day of February next, to places to be determined upon, of which public notice will be given.

The Commissioners venture to hope that the public spirit of manufacturers and other producers will induce their general co-operation in the endeavour of the Commission to procure a representation as complete as possible of the varied products of Canadian Resources and Industry in the forthcoming great Industrial Exhibition of all nations. Wherever it is deemed desirable and advantageous the Commissioners will gladly avail themselves of the assistance of Local Committees.

B. CHAMBERLIN, *Comr.*
Secretary.

Experience vs. Innovation,—A Defence of Old Ways.

To the Editor of the 'Agriculturist,—As many of your numerous correspondents seem to have had but little of what is called the best, but dearest school (*experience,*) allow me to present such, through your valuable pages, with the following lines, which, if fairly practised may yield as good a *profit* with our *little*

expenses as the same quality of lands (stiff, clayey, adhesive, collapsing as they are) do in England with her *fourfold outgoings*. I shall only go back to 1801, before the powerful stimulants of Chemistry now in use were known, either by agricultural or horticultural men, and only a single block scarifier, with 5 A hows, which produced 48 to 60 bushels of barley per acre, was used; but the lands herein described were well farmed, being kept *clean from weeds and not overcropped*, and no machinery in use except in the mining districts. But great crops were generally grown by men of steady attentive habits. I have known 40 to 60 bushels of wheat, 40 bushels of beans, 40 of peas, 48 to 60 of barley, and 80 to 100 bushels of oats per acre of 160 rods, and 2½ tons or more of clover hay grown. Great changes have taken place in England in the last 45 years; a generation of good agricultural men swept away, paupers and taxation quadrupled, with other outgoings great, so that with all the machinery, powerful stimulants, &c., the average produce per acre available for the whole empire, does not seem to exceed £3 15s.; instead of £5; so that I fear the poor farmers have not a comfortable fireside as formerly. But, Mr. Editor, what is the clay land of Canada to come to? A poverty struck garden, or land of thistles, spear grass, purse weed, rag weed, crotch weed, smart weed, &c., all for the want of a regular good four course system of farming, such as used to be done in England in this and the last century. I warrant this plan would do well here. If not, let Jethro Tull's plan of one crop and fallow alternately be practised, as I know plenty of land that cannot be cleared of weeds and well fertilized without it. My plan would be to plough the half of such lands not very deep, say 4½ to 5 inches, early in the fall, to stop the roots spreading, then in the spring, as soon as the thistles are fairly up, take a good scarifier, with say three inch wide tines or hows, to break the ground, or pulverise it 3 or 3½ inches deep, and shortly after (say one or two weeks after, *when the thistles are up*,) fill the second or hind block with good A hows 9 *inches wide*, then scarify it again. This cutting them *under ground* will set them bleeding or running their sap to waste, more than twice or thrice mowing them down, for in this dry climate the wounds dry up immediately, and some of them will soon be in flower and ripen the seed, which the winds spread in all directions. When they get fairly above ground, scarify it again, (the cost may be 3 or 4 York shillings per acre), it is much better and cheaper than turning the furrows up and down with bad ploughs, thus leaving the weed seeds bound up in the clods for future years, the sun burning the fertility out of the soil, and about half the weeds *missed by five or six inch wide shares*, used with bad ploughs to turn furrows 10 and 12 inches wide, and 7 to 10 inches deep, on which I never saw half a crop of grain grow yet. It promotes mildew, and I know no one here who could spend so large a sum of money, and so many years of doubled hard labor as it would require to pulverize and fertilize such lands to make them yield any profit. *I prefer the cultivating well of* 600 *tons of soil per acre for grain*, to 10 or 1200 tons, as the former has produced always good crops for me, but the latter never did. It does very well to raise oak timber, I found; and the Commissioners of Crown Lands in England proved this in the last century by cutting the tap roots off the young trees to make the roots grow horizontally, and in 18 years they were as large as those planted with their tap roots left on to grow perpendicularly down into the subsoil in 45 years. The arable land of Mr. Beetson in England, which he cultivated entirely with a good scarifier, and only drew a single furrow to mark out the stetches 7 feet wide, to carry off the surplus rain water that fell upon it *after the grain was sown and harrowed in*, produced him, on this new system, a clear profit of *three hundred and sixty pounds sterling a year*, (and he only cultivated 110 acres) being three times as much profit as he had received before. I cannot understand why so many farmers are so desirous of ploughing these clay lands so deep, as I know none that will require it, and very, very few that will bear it. It is truly hard for horse and man, and kills the fertility of the soil for many years, causing great outlay without profit in most cases. Indeed I know many farms that I would not accept as a gift to farm myself, even under the mania that I have had for agricultural pursuits, and horticultural also; for in seeing these well practised, delights me more than all the professions in this extraordinary world; but I think, Mr. Editor, that if I were to carry (say only five tons) of the soil that I usually see turned up with these ploughs to a sound, practical horticulturist for him to grow his tropical fruit in, he would look very serious, and very likely think that I must have made my escape from a lunatic asylum very lately, for tropical fruits require a soil that I believe would grow 70 bushels of wheat per acre, and other kinds of grain in proportion. Even in the land of Canaan, splendid crops are grown with only stirring up their lands with a Greek plough, which is of the simplest kind, made with wood, having a fair length of bottom and beam, a short handle, a double winged share, but no mould board; and one horse, or a pair of mules, draw it easily. But in this fine grain growing country, I think the ploughs made and generally used in the counties of Essex, Suffolk, and Norfolk, England, in the last century and beginning of this, by far the best that I have seen anywhere. I have seen sound, pretty good land ploughed in Canada, which produced from 1 to 7 bushels of wheat per acre; of peas, from 6 down to 1 and as high as 12 bushels per acre, and oats from 7 to 16 bushels per acre; Indian corn from 9 to 15

bushels per acre; potatoes from 30 to 50 and 70 bushels, and clover and grass many acres from 1,200 to 1,800 weight per acre, while heavy forests of good timber in the adjoining bush, fed by their own decomposed leaves, with most of their roots on or near the surface, looked lofty and splendid, and when the ground on which they stood was well cleared and sown with wheat it produced from 12 to 28 bushels of good grain per acre. The same land might now produce 8 bushels per acre, if midge, army worm, mildew, and weeds did not prevent it. The return for labour, seed &c., is so small that the owners of these lands have many of them left either for the States or other places. Indeed I think it better to take good wild land, than to take land that has been so badly used. The Society for promoting useful knowledge in agricultural pursuits, implements, manufactures, machinery, &c., in their published volumes state that carrying out the new theory of subsoil-ploughing has destroyed the fertility of nine counties for fifteen or twenty years, which can only be restored at an enormous expense. They are as follows, viz.:—Essex, Suffolk, Norfolk, Bedford, Buckinghamshire, Surry, Staffordshire, Wiltshire, and Devonshire. The Norfolk farmers say it is too expensive to fertilize *deep ploughed land*, and that deep ploughing poisons the land, and brings up a host of weeds.—The Devonshire and Wiltshire farmers say that it requires 20 years to restore the soil to its former fertility. I say that nothing but a good scarifier to pulverize the land, and plenty of lime and good rich oil cake manure can do it. Salt, broken bones, and oyster shells never did any good on my clay land; but 12 bushels of salt per acre adds 12 cwt. of clover per acre on sandy land, and horses, cattle, or sheep eat all the salted part before they will feed where there was no salt put on.

I hope, Mr. Editor, you will excuse my trespassing so long upon your time and space, but seeing the probability of so much destitution with the season, such as I never saw before, with little more than half a crop of many things, and no fruit, and many young people commencing the arduous profession of agriculture without having been brought up to it, induced me to write a little of what I have seen in so many parishes in England on different soils, from sand, gravel, loam, blue and yellow clay lands, &c., and if any of our younger brethren should profit by perusing and practising what is herein written, I should be most happy to know it.

The winters here require everything on a farm to be taken great care of, but the hay and harvest weather is generally delightful. In England I have known many wet hay and harvest seasons, raining three or four weeks, and the grain mostly spoiled. But here if it rains heavy, and even often, this clear, drying air soon makes the grain fit to haul again. It is a rare thing to see wheat stand and grow before cut, or after.

Congratulating you upon the extensive sale of your useful publication, I remain, &c., &c.,

COMMON SENSE.

Cayuga, Oct. 1861.

Past and Future Exhibitions.

To the Editors of the Agriculturist.

GENTLEMEN. — Prehaps you will be kind enough to give space to the following remarks, respecting the management of our Provincial Exhibitions, the result of observations carefully made at several late Exhibitions, and in the truth of which, I am well aware that many of our leading agriculturists fully concur. With respect to the late Exhibition, I believe that with the conduct of the local committee no fault can be found, except in the two respects in which all local committees have more or less been found wanting, namely, that they have been obliged to borrow from the Association a portion of the necessary funds necessary to complete their undertaking, and that while providing most amply for the accommodation of the manufacturers, artists, and ladies, they neglected till the last moment the accommodation for the farmers. And even till the end of the show many valuable animals were lying out without the least protection from the weather.

And this brings me to the consideration of the most important question connected with the future management of our exhibitions, and one to which the attention of the farmers is yearly becoming more earnestly directed. Why are their interests as exhibitors always in practice, if not in theory, regarded and treated as secondary to those of the artizans or manufacturers even of the most trivial productions; and why are those artisans upon whose skill and ingenuity he depends for the various articles which he requires, placed in an inferior position to all others? If any one is inclined to deny the truth of these propositions, let him for a moment place himself in the position of a farmer who goes to the exhibition with a certain amount of stock, say a stallion, a bull, a couple of cows, and half dozen sheep. He goes, as he believes, to an exhibition mainly agricultural, or, at any rate, where agriculture and mechanics stand upon a equal footing. He enters the ground with his stock, after a journey by rail attended with infinite trouble, risk, expense, and fatigue. He has been obliged to pay full fare for his stock, and say half fares for himself and at least three men, and owing to the crowded state of the railway line, he and his cattle have been shunted about from one siding to another, and delayed at station after station, until they have perhaps been twenty four hours without rest, or any refreshment, but what they have carried in their pockets. Now, at any rate, he trusts that his troubles are over, and that his men and his cattle may obtain the repose they so much require.

His groom goes and looks for a stall for his horse. On payment of four or five dollars he is given the key of one hastily erected and in the roughest manner, but still impervious to the weather. The bull, too, which has been kept in a stall by himself, at home, cannot be risked here in any less secure position. A close stall is absolutely necessary, but for it another four dollars must be paid. The cows in the meantime have been fortunate enough to find lodging in a shed, all very well in dry weather, but when it rains the drip from the roof pours down all along the front of it, wets the floor, and renders it impossible for any one to stand and look at the animals without being drenched from above, and soaked in a puddle below. The sheep, however, have not been so fortunate, the train has been delayed, the pens are all taken, and the poor animals, after all the care that has been taken to bring them to the show in good condition, are compelled to bivouac in a temporary and most inconvenient and insecure manner, within an enclosure made of boxes and boards, which the herdsman has, probably, been compelled to collect and carry, as best he might, from all parts of the ground. This was literally the case in several instances at London. It was the same at Hamilton and Kingston, and was infinitely worse at Toronto. Let us suppose now, that our friend having made the best arrangement possible under the circumstances, and having also provided for himself and his three men, as well as he can, walks round the grounds to see what can be seen. Being a thorough farmer as well as breeder, he goes to see how his friend the plough-maker, or his other friend the threshing-mill-maker, or the ingenious mechanic who he knows has something new in the way of a cultivator, a fanning mill, or a seed drill, are getting on. He finds them and their wares arranged around the grounds, in a very picturesque manner no doubt, but thoroughly exposed to the weather, and he forgets his troubles for a while in examining the various improvements which are shown him. But suddenly a shower comes on, and he leaves the implement-maker to face it out as best he may, and goes for shelter into the nearest entrance of a very magnificent edifice which he has long been admiring from the outside, but has not yet entered. Here the first object that attracts him is a fine display of grain, which he examines with interest, and then asks where the roots are? In reply he is told that they have been put in a tent outside, because there was no room for them inside. Looking round to see what causes the deficiency he finds one half of the spacious building occupied with articles in which as a farmer he has very little interest, such as artificial legs, ready-made clothing, pianos, sewing-machines, pickles, socks, biscuits, green-house plants, &c., and the other half with things in which he feels no interest whatever, such as quilts, oil paintings, counterpanes, photographs, embroidery, and water colour drawings. And upon further enquiry he finds that while for his horse and his bull, worth together from eight hundred to a thousand dollars, he has had to pay eight or ten dollars for the use of stalls, which cost very little more in the first place, and while his sheep have no accommodation at all, the cork legs, pianos, counterpanes, and pictures, worth comparatively little themselves, and costing little either of risk or expense in bringing them to the exhibition, are given place free gratis in a magnificent erection which has cost, perhaps, as the one at London did, something under ten thousand dollars! Can our farming friend help feeling a little sore at this state of things, especially when he learns at the general meeting held afterwards, that the association has had to lend the local committee three or four thousand dollars to assist in the erection of this fine palace from which he derives no benefit whatever. And his friend the implement-maker he sees in a still worse position, for he has not even the pretence of shelter afforded to him and his wares. He asks himself, in short, the very question which is now agitating the minds of many: whether the inconveniences thus occasioned by the combination in one exhibition of the four departments of Agriculture, Horticulture, Manufactures, and Fine Arts are not of more consequence than the attendant advantages?

Notwithstanding all the expense that has been incurred in the erection of permanent buildings, adequate accommodation for the agricultural portion has never been given, while such has been the increase in this department that I venture to say, that if arts and manufactures not directly connected with agriculture, were excluded next year from the exhibition building at Toronto, it would not be found one bit too large for the proper reception of implements, grain, roots, and other articles of a similar character. And at the same time an additional five or six thousand dollars would be less than would be necessary to provide the other accommodotion, if such was intended to be of a permanent character.

That the question of the expediency of continuing the present system will soon be more openly discussed than it has been, no one can doubt, although when that time does come many other matters will be taken into consideration than those above alluded to, and which have only been mentioned in this report, as causing practical grievances, which must be met by some means or other. The most important of these is, the want of proper provision for the live stock. The accommodation has always been deficient both in extent and quality. This year there was not anything like the proper accommodation, and yet, we saw in a leading daily journal, a suggestion, that it is admitted that the live stock are well provided for, but that further accommodation is required for manufacturers! At London, the whole of Mr. Lock's cattle,

some forty head, stood out all the time. Had he required shelter for them he could not possibly have had it. Several lots of sheep had no pens of any kind whatever, and what a filthy state the pig-places would have been in had the weather not been extremely fine. To remedy this evil two steps are requisite: In the first place, let the Board decide upon some plan of cattle-shed, which shall enable visitors to see the animals at all times, as completely sheltered as if they were in the main building, and with ease and comfort to themselves, and that having adopted such a plan the Board have some guarantee, that it be properly carried out. In the second place, let the entry books be absolutely closed a month before the show, so that a complete list of the animals entered may be forwarded to the superintendent in time for him to ensure not only plenty of room for all, but plenty of room in every particular class, so that the arrangement may be made complete throughout, and the things properly placed as they come upon the ground. Then the rule requiring the owners of stallions to pay for their stalls should be abolished. Why should a tax be put upon them which is not levied on any one else? A building should also be provided for the exhibitors of agricultural implements. Why should they be the only ones for whom no shelter is provided? These are all reforms which agricultural exhibitors expect and have a right to demand, and if they cannot be carried out on the union system, the sooner it is changed the better—at least, so say the farmers. At the coming show at Toronto, there is no reason why all this should not be done, and well done. Large roomy cattle-sheds supported by iron columns, spacious enough to hold a double row of stalls or pens, with a wide passage for visitors between them, or on each side, could be cheaply erected, and in such a manner as to be highly ornamental, and useful hereafter for any similar purpose. A somewhat similar building, only more lofty, would answer well for the implements, and another might be erected for carriages. Another suggestion I might make, which if properly carried out would be a great boon to many; it is, that some respectable person should be allowed to provide in some retired part of the ground sleeping as well as eating accommodation for herdsmen and others in charge of stock, and for them only, where they could get a good breakfast and supper, as well as a dinner, and a clean bed, no matter how coarse, at a reasonable rate, and without the inconvenience of having to go far from their work to get lodgings.

Another matter to which the attention of the Board should be directed, is the appointment of judges. The present system is one that can only be tolerated on the plea of absolute necessity, and we have seen so many instances of its inefficiency that almost any change would be advantageous. Instead of writing to the different county societies for judges, and then apportioning out those that come among the different classes as is now done, it would be much better to make out a list of men who are known to be judges of different breeds, and of whom there are plenty in the country among retired farmers and others, who are not exhibitors, and by paying their expenses a sufficient number could always be got to do the work properly. Under the present system no one knows whether those who attend as judges in the different classes really understand their business or not; and to give an instance of how utterly ignorant they sometimes are of what they profess to know, a judge of Short-woolled sheep at one exhibition, on being shown a Merino, asked whether it was not a Southdown! Such things are of constant occurrence, and under the system now in vogue it is impossible to avoid it.

Another suggestion which I have been requested to bring into notice, is, the desirability of giving ribbons to the successful animals immediately on the decision of the judges being made. This is done in the States, and used to be the custom here, and would add much to the interest of the proceedings.

Might we not also adopt the plan of the Royal Agricultural Society of England, and have a printed catalogue of the cattle and implements exhibited, so that any person having one of them might by merely looking at the number of the ticket refer at once to the corresponding entry, and there ascertain without further trouble all the particulars that he could possibly desire, as to the owner of the animal or implement, and, in case of the former, its pedigree, &c. A sufficient number of such a catalogue might be sold to cover all the cost of printing them.

The next exhibition will, I hope, be held under the patronage of our new Governor General, who is ranked as one of the first agriculturists and breeders in Ireland, and who we may therefore expect to take a very lively interest in the influence of our association.

I cannot conclude without briefy referring to the disgraceful manner in which the municipal authorities of London permitted the most outrageous and barefaced gambling to go on from daylight to dark, outside the gates of the exhibition ground, in open violation of law and decency. This has never been permitted before, and I trust that it never will beagain. No one who saw the way in which it was carried on, and the mischievous results which followed, could help feeling that, however handsomely the local authorities may have acted in other respects, in this they were deserving of the severest censure.

I remain,

Yours obediently,

WILLIAM O'BRIEN.

CHARRING.—**The best method of charring the surface of wood, is to wet it with the most highly concentrated oil of vitriol. By this means you carbonize not only the outer surface, but the surface of all the cracks and holes.—*Chemical Times.***

Flax Cultivation.

We find the following communication on this important subject in the Toronto *Leader*, by which it will be seen that the Government has undertaken to introduce into the Province several of the improved flax scutching machines lately brought into use in Ireland. By these machines flax can be scutched in a much more expeditious and economical manner than heretofore, and their introduction into this country will doubtless tend to remove one of the chief obstacles which have lain in the way of extensive flax culture.

To the Editor of the Leader, Sir—Some time ago, I published in the columns of your valuable paper a letter on the cultivation of flax. I again deem it advisable to remind the farmers of the importance of this valuable branch of Agriculture. During my visits to several Agricultural Societies, I found a strong desire on the part of the farmers to give it a fair trial, but the absence of proper machinery to prepare it for market seemed to be a strong objection to raise it to any extent. On my visit to Quebec, a few days ago, I brought the matter before the Government, who seemed to see at once the necessity of meeting this objection, and an order in Council was at once issued for the importat n of a number of those machines, manufactured by Messrs. Rowan & Bro., Belfast, to be distributed in various parts of the provinbe, where it may be thought a quantity of flax will be cultivated, and also that mechanics may see them and have the opportunity of making others by them. Certainly too much credit cannot be given to the government for this liberality in thus purchasing those mills. I also had the honor of bringing the matter before His Excellency the Governor General, Lord Monck, who expressed his most hearty approval of the project, and was much pleased at the very flattering prospects of Canada becoming a flax growing country. It would, therefore, be most desirable that the members of the agricultural Societies would organize a flax association; and I hope in a few days to be able to inform them that His Excellency the Governor General will be pleased to become its patron.

Now that machinery for scutching and preparing this valuable plant for market is to be so readily obtained, it is to be hoped we will see farmers of experience, and who already understand the cultivation of flax to a very great extent, make the trial and give it that attention it so well deserves. On my way to Quebec, I called at Montreal, where I was informed, on visiting the extensive mills of Messrs. Lyman & Co., that they had purchased over 40,000 bushels of Flax seed from parties in Upper and Lower Canada last season, furnishing another strong proof that our soil and climate are so well adapted for its growth and cultivation. From this seed is manufactured large quantities of Linseed Oil, and Oil Cake, which we are obliged to send to Montreal and purchase, instead of having those mills in our midst. With the present prospects of a small supply of cotton, owing to the sad disruption in the Southern States, certainly flax must take its place to a very great extent, and become more and more profitable to the farmer every year.

The mode of handling flax, as at present carried out in Canada, does not secure to the farmer the best quality nor most remunerative price, as it is well known by those who have seen it done in Ireland, the seed is never allowed to ripen. The flax is pulled between the time the bell or blossom is on and before the seed is allowed to ripen, thereby securing a much finer fibre and a larger quantity, for which the highest prices are obtained. Only a trial and experience will convince the farmers of this fact, and by attention and perseverance they may obtain their £70 or £80 sterling per ton. as the farmers are doing at present in Ireland.

I may also mention, in conclusion, that I met a gentleman in Montreal on his way to the mills of Messrs. Blaikie & Alexander, Norval, to Messrs Perine' Conestoga, also other mills in the neighborhood of Galt and Berlin, for the purpose of purchasing all the scutched flax they had, and the moment it is known that a quantity is grown here, he will have agents and buyers in the country at once. Let me again urge on the farmers to make the necessary inquiry, and visit those mills, where they will see the ample process carried on of preparing the plant for market after growth, and informing themselves in every particular, which they can readily obtain from those who have already tried it. I trust that the other papers throughout the Province will copy this letter, imperfectly written as it is, in order that one and all may benefit alike by following this most important branch of our agricultural pursuits. In the list of prizes, too, next year, I hope flax and flax seed will be included in every list issued by the agricultural societies.

Your obedient servant,

John A. Donaldson.

Canadian Government Emigration Agent.

Linnæa Borealis.

To the Editor of the Canadian Agriculturist. Sir,—The 19th No. of the *Agriculturist*, dated Oct. 1st did not reach my hands till yesterday, although I am a regular subscriber. I should have otherwise have troubled you with an earlier comment on a notice of the "Linnæa Borealis," page 607, which you have transcribed from the pages of the Montreal *Commercial Advertiser*. The correspondent of the latter paper is, I think, in error when he asserts that the plant received its title from

Linnæas. It was selected as the vehicle for the conveyance of that illustrious and honored name to posterity, by Dr. J. F. Gronovius, who obtained the sanction of the great botanist of of Sweden for that purpose. Its colour, too—I have a sketch of it, drawn from nature, before the present moment—is scarcely correctly noted: instead of being "white tinted with pink on the inside," its blossom may with greater propriety be called "flesh-colored;" or, according to Gray, "purple and whitish." The hue, however, may vary with the situation.

Neither let it be imagined that its "habitat" is confined to the neighborhood of Riviere du Loup and Cacouna. It is a floral "citizen of the world," found in various European and Asiatic countries, as Sweden, Lapland, Norway, Germany, Switzerland, Savoy, Siberia, Russia, Scotland, where toward the end of the last century it was discovered in the Highlands,—it may be gathered in abundance in this county, and if the ladies of Peterboro destre to deck their summer hats with its graceful, pendent twin-blossoms, they have but to stroll to the cemetery on the margin of the "little lake," where they may gratify their taste to any extent they please. Your obed't. servant,

V. C.

Peterboro, C. W., Nov. 20, 1861.

Anacharis Canadensis.

To the Editor of the Canadian Agriculturist: Dear Sir,—In the *Agriculturist* of 16th June last, page 382 you notice an American weed in England under the name of *Anacharis Alsinastrum*, and in the last number of the *Agriculturist* the same plant is noticed under the name of *Elodea Canadensis*, and you ask if it is known in Canada.

The plant is known to Botanists under a variety of names, being called

Elodea Canadensis, by Michaux.
Udora Canadensis, by Nuttal.
Anacharis Canadensis, by Planchon.
Anacharis Alsinastrum, by Babington.
Serpicula Verticilata, by Muhlenberg.
Serpicula Occidentalis, by Pursh, and
Apalanthe Canadensis, by Planchon.

Professor Asa Gray in his Manual of the Botany of the Nothern States, adopts the name of *Anacharis Canadensis*, and mentions it as being common. Mr. Billings, in his list of indigenous plants found growing in the neighborhood of Prescott, published in the *Canadian Naturalist*, vol. 5, page 19 mentions it under the same name *Anacharis Canadensis*, as being common in ponds and slow streams. I have not observed it in any other list of Canadian plants; it is, however, abundant in the Dundas Marsh and Burlington Bay, and I have no doubt it is common in the neighborhood of Toronto about the mouths of the Don and Humber.

It is somewhat singular that a plant which has caused as much trouble and annoyance in England and Holland, by filling up watercourses and impeding the navigation of rivers and canals, should be almost unknown, and should not have caused any sensible obstruction to the navigation of the canals and rivers of this country where it is indigenous. I am inclined to think that the accounts given of it in the English papers are a little exaggerated. That the plant is propagated with extraordinary rapidity, and that it may intefere with the flow of water in ditches and small watercourses is very probable, but that it should interfere with the navigation of large rivers and canals seem to be extremely improbable and contrary to our experience in Canada. A plant that propagates itself with such ease and rapidity can be easily experimented upon, and its habits studied in a small aquarium, and perhaps some of your readers may be induced to try some experiments with it.

I am, yours &c.,

"Canadensis."

Hamilton, Oct. 22, 1861.

On the Rearing of Calves.

BY MAJOR S. M'CLINTOCK.

These observations are offered to advocate the abandonment of the old system of raising calves, for one which shall insure a quicker return, and, therefore, greater profit to the farmer—a change which the condition of our stock and meat markets, the state of our root crops, the rising prices of dairy produce, and the sounder views of economy now prevailing unite in enforcing.

Let us first cast a glance at what may be called the "old system," or that according to which calves are kept on as *liitle* as will maintain them alive, turned out by day in all weathers, indifferently housed at night, receiving a scanty supply of milk, and that, perhaps, skimmed; so that to the pasture the calf must look for food all day—the half of which is spent by the unfortunate and neglected animal standing gazing and shivering at a gate, in anxious expectation of the herdsman to drive him to his hovel. What is the appearance of this animal? Do not his lean, ridgy back, his bare points, staring coat, and distended belly show his pitiable condition? And whence this last feature? When the calf, with a keen appetite, leaves the hovel, supposing he has the benefit of such cover, and proceeds to "blow himself out" with grass, like a half-starved Caffre revelling on the carcase of an eland, the result will in either case be a distended abdomen, showing clearly the imprudence of the "the *large and seldom*" mode of feeding, as compared with that of little and often.

The calf, of all the animals on which the farmer is dependant, certainly fares the worst, and to him "fair play" is too often unknown. Yet, however great the value of milk may be to man for other objects, it must surely be unwise to rob the calf as much is frequently done; let him not be denied pure as good milk for a time, and only as he gains strength let other food be substituted.

As soon as the calf is dropped, nature prompts the cow to lick her offspring, and I am disposed to allow her to do so, feeling satisfied it is a vivifying process, very beneficial to the calf, and under which it seems to be really at times endued with life itself, besides cleansing the skin from the viscous matter by which it is overspread; the mother also is benefitted by this operation, obtaining thus a medicine suited to her present situation—one which nature designed for her.

I am aware it is sometimes the practice to take the calf at once from the cow, in order to prevent her from knowing and becoming attached to it, and thereby guarding her against fretting, which would not only intefere with her proper yield of milk, but aggravate the fever which already prevades the system; in this case it becomes necessary to rub the calf with cloths and whisps until it is dry and clean. It may, indeed, in certain cases be desirable to remove the calf at once, as some cows, and especially those with their first calf, plainly show an inclination to injure it. But, as a rule, it is better to allow the cow to lick the calf; and so much importance do some breeders attach to this operation that, when the mother shows a disinclination to perform the office, salt and meal are sprinkled on the body, to tempt her to do so.

Supposing the operation of licking or rubbing to have been duly performed, the calf should be left quiet for some time in a place by itself, and beyond the mother's hearing, when she will very soon forget it, as it is, doubtless, desirable that she should do.

The following reasons may be briefly assigned for giving the preference to rearing by hand rather than allowing the calf to "run" with the mother, in spite of the advantages which the natural process has in promoting the secretion of saliva, and thus aiding the organs of digestion. When a cow is allowed to suckle her calf, she will not give her milk to the hand during the time the calf is "on her," and seldom *so kindly* ever after; neither when he is removed after a few weeks, will she readily suffer a nursling to be foisted on her. If the cow falls ill it will then be too late to endeavour to substitute the pail for the mother, and in all probability the calf, if reared at all, will prove an unthrifty, unpaying animal; again, if a cow bring up two calves at once, the fastest sucker will have an undue share of the milk; lastly, rearing by hand is the most economical method, as guarding against all irregularity or failure in the supply of food, which may be regulated to suit the object in view—diluted, mixed, increased, or decreased, according to the age of the animal, so as both to promote growth and make the process of weaning almost unfelt.

The cow herself should never be hurried or overdriven, as any increase in the ordinary respiration produces a heat in the milk which takes from its excellence. Respiration is a species of combustion; at every breath we inhale oxygen from the atmosphere, which unites with and consumes the fatty matter in the food. Cows when overdriven or worried breathe more frequently, inhale more oxygen, and consequently, more of the buttery portion of their food is consumed, leaving less to impart richness to the milk. On this account, in very hot weather it is well to house cows by day, thus relieving them from the irritating attack of flies, and to turn them out at night; on the other hand, it is well known to experienced dairymen that their cows yield more milk inwarm, pleasant weather, when they have the run of a sheltered pasture, than on a bleak field, in cold, rainy days—a difference which the same theory of respiration equally accounts for.

The old, and I trust almost exploded, system of giving medicine to the calf, in order to cause it to expel the first glutinous fæces (or meconium) is so contrary to nature that it must be censured. The delicate intestines of a newly-born calf are not prepared for castor oil or spirits.

Let its own mother's first milk, colostrum, or beistyn, be given two or three hours after birth; it is nature's medicine, unfit for human use, but prepared with a wisdom beyond ours to meet the requirements of a newly-born calf. This "colostrum" appears at every delivery, and from its peculiar nature produces a purgative action, and causes the "meconium" to be voided, which for some time before birth, has been forming in the intestines of the calf.

We have heard of an egg shell filled with spirits being put down the unfortunate animal's throat—the spirits to invigorate, and the egg-shell to clear the way and lubricate the passage to the stomach. Some give the egg, yolk, white, shell and all; and in Ireland, the panacea of all Hibernian woes—whiskey—is thought to be the "elixir of life" for calves, though it must be said that the sister kingdom of England has its breeders, and some of celebrity, who do not fail to administer the glass of spirits in every case where a calf is born.

By thus early overtaxing the stomach and thwarting nature in its well-ordered course, the seeds of delicacy are surely sown. Medicine should not be tolerated until there is actual cause for its use, and then let it be administered by some one who can not only judge of the disease, but suggest a remedy to meet it. I hold it to be a great mistake to overload the stomach of a newly-dropped calf; so I consider the "beistyn"

should be given in small quantities at a time, and, in the case of a healthy calf, not until it has strength to stand, as it is clear as it could not suck its mother until it had so far progressed.

Should any apprehension be felt respecting the inactivity of a calf's bowels, or tardiness in expulsion of the meconium, the simple mode of inserting a piece of common soap, from two or three inches in length by half an inch in diameter, in the anus, and then rubbing the part briskly with the hand, in nine cases out of ten will cause a proper evacuation. I have so very often seen this plain and harmless treatment successfully applied, that I invariably adopt it, and with the greatest confidence recommend it from its simplicity and efficacy.

The colostrum or beistyn, more commonly called "beastings," sometimes continues so long as to be of serious injury to the calf, but this is chiefly caused by feeding the cow too highly after calving.

The milk given to the calf should not be suffered to become cold, and by the assistance of the herdsman's fingers (which the calf will eagerly suck) as much may be taken up as required. Some calves will learn to suck by the fingers in a day. The palm of the hand is placed over the nose, with the fore-arm against the face; the middle finger is inserted in the mouth of the calf, while the other fingers retain the head in the proper position. With the other hand the vessel is held, which at first should be somewhat raised, and not allowed to rest on the ground—that being an unnatural position, and different from the one the calf would be in if allowed to suck its mother. In this we shall be only adopting in the calf-house the same amendment which has already made its way into the stable, where the hayrack is no longer fixed in a manner rather suited to the giraffe than the grass cropping horse.

The milk should at first be given in small quantities, say three pints every four or five hours, till the calf gain strength, when it may be increased gradually to as many quarts. Of this increase the herdsman alone can be the judge—a practised eye at a glance sees anything wrong. There is no animal in which disease is more easily detected than the calf. In health, he sleeps quietly or is full of play; in sickness he is dull, and, from the action of the flanks, distaste for food, sharp champing of the teeth, cough, or symptoms, it is clear he is *amiss*.

There is considerable danger to calves from taking up straws and swallowing them before their powers of digestion are able to master such food. I have seen valuable animals lost by this, and, on being examined after death, a mass of undigested straw has been found incarcerated in the stomach. In order to guard against such occurrences, a muzzle should be kept on the calf until after it has been perceived to "chew the cud." The muzzle may be made of either wire or leather, simply shaped, with a band sewn at each side to buckle behind the ears. It is usual for the calf to begin to the cud in ten days, when the muzzle may be removed.

Much injury has been caused to calves housed together, from sucking each other, as they frequently take hold of the navel-string, a part of great delicacy in a newly dropped calf.

The passage of the urine is also very important. I have seen calves appearing heavy and dull, lying down and panting, and to an observing eye evidently "wrong." The herdsman satisfies himself that the bowels are regular, but he cannot be so sure of the urine. I have observed him get the calf up, stand immediately behind it, and rub its sides vigorously with both hands at the same time, then gently manipulate the sheath, when presently the water flows copiously, and the animal is at once relieved. Now, here are cases which, perhaps, were they neglected, might become formidable and require the drenches of the cow-leech, and they combated most successfully by the simplest means.

It is important that the calf should be fed from the milk of the same cow daily; a very little attention will ensure this, if the cows are milked and the calves fed in the same order. Any sudden change of food is injurious, as the least sourness in the stomach causes "scour"—one of the worst evils calves are liable to. On first observing it, a diminution in the quantity of milk may check the disease, which not unfrequently arises from the stomach being overtaxed.

In rearing calves our object must be to combine efficiency with economy, and to realise profit from the dairy without robbing or stinting the calf. We follow nature for a while, but are forced into another course ere long. We begin with pure "mother's milk," but in a fortnight a change must come. Milk is too valuable to be continued in its pure neat condition, and a slight, very slight, change is introduced, consisting in the substitution of oil-cake gruel for a portion of the milk. The gruel is prepared in the following proportion—one quart of cake (ground fine) to four of water. This pulverised cake is put into a bucket, and the water, boiling, poured on it. It is allowed to stand about eight hours, being occasionally stirred. My practice is to begin when the calf is about a fortnight old, to add a very little of the gruel to the milk, and to increase the quantity by slow degrees, with a decreasing allowance of milk, until, at weaning time, the former has gradually taken the place of the latter. But when a large quantity of gruel is given, its potency must be lessened, to guard against purging; and it will be desirable to add to every two quarts of the gruel, as above mentioned, one quart of water.

In employing an artificial substitute for milk, the following principles should guide our choice:—

1st. The nearer we are to nature the better, and the food which most resembles milk must be the best for calves.

2ndly. Care must be taken that the food be not too rich for the young animal.

3rdly. Growth and development of the frame must be provided for, to which end the food should contain an ample supply of the phosphates.

Oil cake gruel seems to fulfil these conditions, being less rich, and containing a larger percentage in phosphates, than the pure linseed. We learn, it is true, from Mr. Cuthbert Johnston's excellent book, "The Modern Dairy and Cow Keeper," that the only kind of food in which casein exists is that derived from leguminous plants, such as beans, peas, and lentils. When bean-flour is softened and ground up with water, and the infusion passed through a sieve, the water is found to contain casein, fat (butter), and starch. The latter deposits by standing, and the infusion has now all the character of skimmed milk, as, in fact, with the exception of sugar of milk and butter, it is precisely identical with it. The addition of some fatty gummy matter (as an infusion of linseed-cake) would more nearly approximate it to the composition of ordinary milk; and it is well worthy of remark that in several districts in England, and in many of Scotland, pea or bean soup is very frequently given to young calves."

In spite of this resemblance between milk and bean or pea soup, I confess to giving a preference to oil-cake, partly because I have no trouble in procuring it, whereas in some seasons I have failed together in securing a supply of those crops in the neighbourhood.

Though doubtless much may be learned from the practice of owners of short-horns who exhibit at our agricultural shows, I fear we should bid adieu to profit if we adopt their mode of calf-feeding. I am satisfied no yearling calf is put into a show-yard for competition at a less cost than £20. The fat must be put on "regardless of expense;" a lean calf has not a chance of gaining a premium; and though I cannot defend the system of "fat at any price,', still, judges must not be condemned who pass over a lean animal with a good shape. Early maturity and great thrift are characteristics of true short-horns; and I must confess I should suspect delicacy when I did not at a show see ripe condition.

A good feeder is invaluable to an exhibitor: the ignorant herdsman thinks *quantity* is the object; the judicious feeder is always on the watch, adopting the "little and often system," changing the food by degrees, and correcting any loosening effect which one kind of substance may have by the substitution of another. He never puts an animal up that is lying, as he knows it is "doing" as much when at perfect rest as if it had its head in a bucket of milk; quietness and gentleness follow all his movements, and the animals remain in that peaceful, placid state so conducive to their well being. They know "the times and seasons" as well as he does, and with astonishing punctuality rise and expect their feed; and the herdsman is careful not to be behind time, knowing well that "fretting causes wasting," and, if the calves are suffered to bellow and moan for their meals, the meat will not be "put up" as rapidly as it ought. This part of the system might well be more generally adopted, for kindness, quiet, and regularity cost nothing.

No doubt, some owners of short-horns make this mode of feeding pay, particularly those who have tribes of cattle of undoubted purity of blood and fashion, and have won themselves names as breeders; but to the ordinary amateur it is an unprofitable amusement, expensive and disappointing—*Journal of Royal Agricultural Society of England.*

To be continued.

The Potato Disease.

If the name of De Bary were not so well known both in this country and the continent as that of a painstaking, judicious observer, far less given to theory or to merely transcendental views than the greater part of the compatriots, the pamphlets which he has lately written on the potato disease would have quietly died in the birth, if the author escaped ridicule for approaching again a subject which could scarcely end in anything after all his labour better than the production of a "ridiculus mus." The brochure, however, contains a great deal that will repay more than cursory perusal. He has not only passed in review, without a particle of prejudice, all that he has met with at all worthy of notice, but he has instituted a careful series of experiments, which place the particular view of the subject which he embraces in the most clear and convincing light. He has, moreover, added greatly to our knowledge of the peculiar parasite which uniformly precedes, and as he, in common with most authorities at the present day, believes is the immediate cause of the malady, and especially as regards its mode of reproduction and the limits within which its reproductive organs germinate.

It is not our intention to go again over the ground which has been so often traversed in this journal. All attentive readers of our pages are acquainted with the external characters and habit of the parasite as described by its earlier observers, and we have already given some account in the *Agricultural Gazette* of this year, at page 486, of the curious discovery of De Bary relative to a third mode of propagation by means of zoospores, and that apparently the most frequent. The spores themselves under certain circumstances are undoubtedly capable of germination, but more frequently, when well supplied with water, instead of germinating they show at once signs of important changes in the granular matter which fills their cavity, which

ends in the production of a number of reproductive bodies closely resembling many of the more minute infusoria, and moving about for a time with the utmost activity by means of two long lash-like appendages, one of which appears to be the organ of motion, and the other to act as a rudder for its regulation and direction.

In consequence of this mode of increase, and of the extreme rapidity with which the zoospores run through their course from germination to the production of perfect spores, the quantity of bodies capable of propagating the disease which may arise in the course of one season from a single diseased plant is almost incredible. Passing over the stem, from which the perfect parasite more seldom makes its appearance, it is calculated that one square line of the under surface of the leaves is capable of producing 3,270 spores, and as each of these yields at least six zoospores (the number being sometimes as high as 16), we have 19,620 reproductive bodies from that small space. The quantity, therefore, yielded by a single plant is enormous, and as the mycelium from the zoospores is capable of penetrating the cellular tissue in 12 hours, and when once it is established there, and bursts through the breathing orificies or stomates of the leaves, it perfects its fruit in from 15 to 18 hours, and since the zoospores are perfected and ready to germinate in 24 hours from their being placed in water, it is scarcely possible to calculate the myriads of plants that may spread from a single centre. As continued moisture is absolutely necessary for the germination of the spores and the production of the zoospores, it will at once be understood how rapidly the disease is propagated in wet weather, especially if it be warm, and what a check to the disease a season like the present autumn must be. It will also be apparent under what circumstance the zoospores will have readiest access to the tubers, and that those which are nearest the surface have a less chance of escaping than those which penetrate deeper into the soil.

That the brown spots so characteristic of the disease are a consequence of the action of the spores or zoospores has been proved by direct experiment by Dr. De Bary. By placing a quantity of spores in a drop of water on the leaves, stems, and tubers under a bell glass so air-tight below that evaporation cannot very readily take place, he has produced the brown spots, and has traced their progress from the first penetration of the spawn of the fungus from without, when the discoloured specks are quite miscroscopic.

He has moreover shown that neither the spores nor sporangia can resist many weeks of continued drought; and inasmuch as the spores so rapidly produce zoospores when exposed to sufficient moisture, it is clear that the disease cannot be propagated from year to year by means of either. As regards another form of fruit which has been observed, though very rarely, amongst the creeping threads of the spawn, too little is known to speak with any probability, much less with certainty, of its powers of endurance.

As, howevet, it is a well known fact that fungi may appear under very different forms, and that there are two fungi, especially Fusiporium Solani, which form the white nodules on the decaying tubers, which are almost as constant attendants on the potato murrain as the well known parasite of the leaves, it became necessary to follow out their growth, to see whether in any case the fungus of the leaves or the brown spots could be produced from the white moulds of the tubers. Every experiment, however, under whatever form it was made and however varied, produced only like from like, and De Bary was obliged to give up the notion as visionary. It appeared clear, therefore, that the disease was transferred from year to year by means of the tubers, which when impregnated with the mycelium, and not in too advanced a state of decomposition. always yield on experiment the true fungus of the potato murrain. The conclusion from the whole matter is clearly this, that it is quite useless to attempt to destroy by any external remedies a parasite which so completely undermines the tissue of the plant, as in the case of the vine mildew, where the threads of the parasite creep over the surface. Early planting, removal of the haulm when diseased, drying of the tubers and other remedies which have been recommended, must be considered rather as palliatives than preventives. De Bary, however, suggests one mode which may in all probability prove useful in careful, intelligent hands A plot of ground of sufficient size only for the production of the seed tubers which may be requisite, and as distant as may be in the farm from the general potato crop, is to be selected, and that perfectly well drained, and as much adapted as possibie for the growth of healthy tubers. This is to be planted with tubers which show no outward trace of disease. The crop is then to be watched carefully, and the moment a diseased leaf appears, it is to be removed and destroyed, the cultivator himself undertaking the task, and going carefully over the plot, which must, of course, be of manageable dimensions, two or three times a day. The stems are always to be watched, and if necessary, they as well as the leaves must be removed. The zoospores under such circumstances, unless brought from a distance, cannot be washed down to the tubers, and a very few only will be diseased. A repetition of the process would, in all probability, banish the malady in a great measure from the farm. It is obvious, however, that the cultivator must have a distinct knowledge of his enemy before he sets to work, and not mistake merely withered or curled leaves for the ravages of the mould.

We may speak highly from our own experience of the benefit of deep digging before the

potatos are planted, though they themselves should not be sunk too far in the soil, and of a second hilling up to cover effectually the more superficial tubers. Those which are deep seated are seldom diseased except in very unpropitious years.

We may add a peculiar circumstance which has occurred to De Bary in the course of his experiments. On dividing sound potatos, for the ake of observing the difference which takes place in those parts which have been left in their original condition and those to which he applied the zoospores, he found that after a time a new cuticle, consisting of several layers of table shaped cells, was produced on the cut surface. This is precisely what takes place in the disease called scab, as will be found in a memoir on the subject in the third volume of the Journal of the Horticultural Society of London. —*M. J. B, in Gardeners' Chronicle.*

The Wheat Crop.

(*Continued from page* 650.)

The quantity of seed per acre is the next point which claims the farmer's attention. This is one of the questions—"thick or thin seeding" that has been of late years the most discussed in agricultural circles, and one about which the greatest difference of opinion still exists. There are some principles connected with this point, which, if admitted, ought to render the solution of it less difficult than it appears to be, by limiting the range of difference to certain conditions. We can readily conceive, and long experience has confirmed it, that under equal circumstances a plant like wheat will increase more in nine or ten months (if sown in October) than in five or six months (if sown in February or March,) and that the produce will be greater in a rich, deep-tilled soil than in a poor, shallow one. The deductions we should make from these facts are very obvious:—1. That the earlier we get our seed into the ground, the more opportunity it has to increase, and the less the quantity required to produce a crop. 2. The better the soil and the deeper it is tilled, the greater the proportion of food, and the greater the range the roots have to procure it in, and consequently the more vigorous and productive each plant will be, and the less necessity is there for multiplying them by thick seeding, in order to secure a sufficient crop. Therefore, as a general rule, we may consider the quantity of seed sown according to the lateness of the time of sowing, and also according to the character and general condition of the soil. For instance, on land where one bushel would be considered sufficient for October sowing, it would be advisable to increase the quantity to 1½ bushels in November, to 2 bushels in December, and to 2½ to 3 bushels for spring sowing, according as the season was advanced. On rich, deep soils, compared with the soils of inferior quality, the same rule should be observed, bearing in mind always that the character of soil, and the period of getting the seed in, have each of them an influence on its powers of produce.

There are three different modes of effecting this, practised in different parts of the country—"broadcast," "drilling," and "dibbling." In the north the first, broadcasting, still is generally practised. In the midland and southern districts drilling universally prevails; while the dibbling process is only to be met here and there, under peculiar cumstances either of soil or labor. The preparation of the soil for each mode of sowing is the same. It should be plowed as deep as possible, carefully cleaned, and the mass, not merely the surface, reduced to the finest tilth, so that the rootlets of the young plants may have no obstacles in penetrating the soil, and may have their feeding surfaces increased.

The process of *broadcasting* is a simple one. The seed to be sown is carried by the sower in a bag (sowing sheet) or basket (seed-lip,) of a convenient form, suspended from the neck in such a position that the sower can have access to it either with one or with both hands, according to the manner in which he intends to distribute the seed, whether with one, as is usually done, or with both hands. At starting, he marks off with a "feering pole," on the headland, a distance equal to the breadth he can cover in his cast, so that on his return down the land again he may keep a perfectly straight line, and thus avoid leaving any portion unsown, as is frequently the case with careless sowers. The breadth covered with each cast is from 6 to 8 feet, and from 10 to 12 acres is quite sufficient for a day's work.

The operation is purely that of a skilful and careful manipulation, and a few acres more per day sown are not to be considered for an instant in comparison with the regular and careful distribution of the seed on the surface, which is usually only acquired by long and careful practice.

In *broadcasting*, whether on the harrowed surface or on the plowed ridges, which is frequently done for the purpose of more readily covering the seed, a certain proportion of the seed is always left under conditions unfavorable to germination, either by being left on the surface or by being buried too deep; consequently, it is always customary to allow for this by increasing the quantity sown. This increase should be about one-third to one-half more than than that used by the drill; say, for instance, where two bushels of seed are drilled, three bushels should broadcasted. The use of the broadcast machine ensures a more equal distribution on the surface, but leaves the other imperfections of the method the same. The

necessary quantity of seed should be carried into the field, and left in sacks most convenient for the sower.

The practice of *drilling* was introduced by Jethro Tull, to obviate the difficulty, nay, impossibility, of keeping the land sown broadcast free from weeds. Owing to the vast improvement in the adaptation and manufacture of agricultural machines generally, this practice has widely spread itself of late years. The advantages it offers are—a considerable saving in the quantity of seed necessary (from one-third to one-half), owing to the greater regularity in the proportion of seed sown, and the depth at which it is deposited; and the power it gives to sow the seed in parallel lines at any distances apart that may be desired, so that the surface may be stirred after the heavy rains of winter, and kept free from weeds, either by the hand or the horse hoe, during the early growth of the plants. The quantity of land to be drilled in a day depends upon the size of the machine used, and this is generaly determined by the size of the farm, or rather the arable portion of it. This can readily be calculated: thus, if the amount of labor, both manual and horse, with an allowance for the use, or wear and tear, of the machine, be summed up, and divided by the area of the land sown, the cost per acre for drilling is readily ascertained.

The third method of sowing, that of *dibbling* the seed in, is very rarely met with in practice to any extent in reference to wheat sowing, though it still prevails to a considerable extent with beans, mangel wurzel, and similar crops. The object gained by this process is a great economy, even in comparison with the drill, in the quantity of seed necessary, an equal distribution of the seed over the whole surface, and security against any of it remaining on the surface uncovered. The proportion of seed for dibbling is usually from one-third to one-half the quantity that would be used for drilling under the same circumstances—that is to say, when from 1½ to 2 bushels are drilled, from 2 to 4 pecks would be sufficient for dibbling. The process of dibbling is a very tedious and expensive one, notwithstanding the certain amount of success which has attended several attempts to substitute mechanical for manual labor. These may be seen well described in the *Cylopedia of Agriculture*, under the head of "Sowing Machines." In all the operation is the same, though effected by different means: a hole or depression in the soil is made to a given regulated depth, at the bottom of which a certain proportion of seed (usually about three grains) is to be deposited—these holes being made at certain regular distances from each other, and in as perfectly straight lines as with the drill. It is a very difficult matter to estimate the quantity of land to be dibbled per day, as as it is entirely governed by the mode of doing the work. Where, through an erroneous idea of social economy in relation to the application of labor, the operation is done by hand, both the proportion of seed and the depth at which it is deposited are always irregular and unsatisfactory, and the work done is very small. These drawbacks, however, more or less disappear by the machinery placed at our disposal. The only comparative trials that I have had an opportunity of making have been with Newberry's dibbling machine. This is a costly and cumbersome, but, under suitable conditions, an effective machine for the purpose. With this machine about four to five acres per day can be got in, with the same amount of horse and manual labor as would, with the drill, enable you to sow about three times that area, or twelve acres; consequently, the expense of dibbling under these favorable conditions would amount to rather more than three times that of drilling, as the sum allowed for the wear and tear of machine would be considerably increased.

The relative advantages and disadvantages of these three methods seem to be as follows:—

Broadcasting enables the farmer to get his seed in at a quicker rate, and at a less cost than by the use of machines; while, at the same time, in adverse seasons, he is less dependent upon the weather at seed time, if his land is kept well cleaned in his fallow crops, he may not suffer much by leaving his crop beyond the reach of the hoe during its period of growth. On the other hand, if his land be foul at sowing, it necessarily becomes worse at harvest time, and the crop must have been injured, as every weed grown on the surface has abstracted from the soil a certain amount of food, which would have gone to increase the crop under cultivation. This condition of things soon tells its own tale on the debtor side of the farm ledger, while another item to be entered there is the extra quantity of seed required to be sown. This generally amounts to considerably more than the entire cost of machine sowing.

Drilling offers the great advantage to the farmer of being able to regulate the exact quantity of seed to be sown—to sow it equally all over the field—to deposit it at a given regular depth in the soil—to ensure its being properly covered. A saving of seed to the extent of one-third to one-half as compared with broadcasting is effected, and by being deposited in the ground in straight parallel lines, great facilities are afforded for keeping the surface free from weeds, either by hoeing or hand-pulling. The produce also per acre is, under equal conditions of soil, climate, &c., shown to exceed that of broadcasting. The only charge that can be advanced against drilling is, that perhaps it offers some assistance to the wireworm in its destructive attacks on the young plant, by forming a furrow of loosened soil, along which the wireworm takes its course without any difficulty, destroying each plant in succession. This, however, on soils subject to it, may easily be checked by running

a ribbed roller, either Cambridge or Crosskill, across the line of drills, by which the continuity of the furrowed course is stopped at each indentation of the roller. The wireworm, then, owing to its small powers of forcing itself through the soil, can only move from plant to plant by coming up to the surface; this materially checks its progress, while its presence there is continually sought for by various insectivorous birds.

Dibbling is to be recommended chiefly for the more perfect manner in which the seed is deposited in the soil, both as regards the equality of its distribution and as regards the portion of area allotted to each plant. The amount of seed saved by this method is an item of consideration—drilling requiring twice, and broadcasting four times the quantity. The seed, too, by being deposited in separate, unconnected holes, is not so liable to be destroyed by the wire-worm as when sown in drills; while the parallelism of its lines of plants offers even greater facilities for cleaning than in ordinary drilling. Some care, however, is necessary that the dibbling machine should only be made use of when the soil is suitable, and in suitable condition. If it is too light or too dry, the sides of the holes are apt to fall in with the seed, or often it is quietly deposited, and then the depth is irregular, often too little. If the soil is heavy or too wet, the dibble forms a hole or cup, with compressed sides and bottom, in which the water collects, checks the germination of the seed, and materially injures or destroys the vitality of the young plant.

As soon as this change has been effected, and the plant recovers from it and assumes its independent functions, a knot or node is formed at the surface of the soil, just above where the stem and roots meet, and from this other roots and stems branch out, forming independent plants, and materially adding to the produce of the original seed. This is what is known by the term "tillering" in the wheat, and never is commenced until the plant has assumed its independent functions, and the roots have begun to assimilate inorganic food from the soil. Here the vigorous and healthy constitution of the plant exhibits itself, by the "tillering" power it posesses in the formation of new roots and stems; while the condition and quality of the soil are also seen by the manner in which the subsequent development of the plants is carried out; as, unless it contains plently of food, in a suitable condition for the crop, the roots, vigorous though they may be, will not, of course be able to obtain the necessary supplies. We should then see that an increased number of plants does not always produce an increased return—that, in fact, the stock was in excess of the keep; for, if we have increased numbers, we have increased power of supplies, or their vitality will be affected, and their produce diminished.

In suitable soils and under favourable circumstances, this power of increase in the cereal plant is remarkable. Pliny relates that in the time of Augustus Cæsar a sheaf of wheat, containing 400 perfect stems rising from a single stock, the produce of Mauritania (now Algeria), was exhibited at Rome, and that at a later period another sheaf, containing 360 perfect stems, the produce of a single grain, was presented to the Emperor Nero. There are numerous well authenticated instances of the reproductive powers of the cereals, under favourable conditions of soil and climate in our own as well as in other countries. At the exhibition in Paris, 1849, two plants of wheat were shown, the one carrying 122, and the other 152 perfect stems. Again, at the International Exhibition of 1855, several similar instances of the fecundity of the wheat plant were to be seen. In the Museum of the Royal Agricultural College, a barley plant may be seen, consisting of seventy-eight perfect stems, which yielded 1,780 grains, the produce of a single seed sown in the neighbourhood of Cirencester in the spring of 1847. These, of course, are all exceptional cases; still, they have their value as instances of the enormous increase the reproductive powers of the cereal plants are capable of when acting under favourable conditions.

Although the individual farmer may never be able to realise in general practice anything like these returns, still he may rationally expect that the more he strives in his practice to meet the requirements of the plant he cultivates, the more likely he is to secure successful results. In agriculture especially, *effects* are readily seen—say in the shape of good or bad crops—though, in the present defective state of our knowledge, it is very difficult to assign their exact *causes*. The best way to ensure success is to deserve it, and we can only deserve it when we have fulfilled all the conditions which experience in principles, as well as in practice, has pointed out to us.

In the cultivation of wheat we have, first of all, the *soil* to look to, to see that it is in a proper state, both mechanically and chemically. for the growth of the plant—mechanically, that its particles are finely divided, and yet sufficiently coherent to form a firm bed—that they absorb moisture, but admit of free percolation of superfluous wet—and that the tillage processes have been carried down as deep as possible, so as to give the roots the maximum amount of feeding surface.

The *chemical* conditions of the soil are less understood, and far less under our control, than the mechanical; fot, not only is it requisite that the soil should contain all the ingredients required by the growing crop, but that these ingredients be severally in a state such as the plant can assimilate or make use of. The roots, of course, are the only parts of the plant through and by which the ingredients of the soil can be absorbed for the use of the growing plants, and these can only assimilate them when in a soluble state. Without now venturing upon a discussion

of the important question of plant nutrition, as to whether the excretory theory of Decandolle, recently revived and supported by Gasparini, or the simpler mineral theory of the chemists, is the soundest, we may recollect that the power of the roots to absorb from the soil the various substances necessary for the plant is more than a mere mecanical one, as, whether or not they have the power of preparation, they unquestionably have the power of selection, and only select such as are necessary for their purpose, and in a suitable state. They do not absorb indiscriminately all matters they find in the soil in a soluble state—of which the inorganic are, of course, in excess ; but appear to have the power of selecting those that are desirable, and of refusing those which are not necessary for their purpose. This power appears to be more developed in some plants than in others ; it exists, however, in all, and is controlled, probably, by some difference in the structure and substance of the pores or cells through which the food passes into the extremities of the roots, according to the different orders, or even genera of plants, which exerts an influence upon their general powers of absorption and assimilation.

After the substances have been absorbed by the roots, a chemical power or action is called into play, and a change appears to take place in the matter absorbed (food), as it is carried up by the ascending juices (sap) of the plant towards the stem. Of these changes, and the mode in which they are carried on, we know but very little at present; we only know that they do exist, from the changed character found in the sap.—*Our Farm Crops, by* Professor Wilson.

To be continued.

Deposits of Guano on the Coasts and Islands of the Pacific.

(Continued from page 653.)

The scarcity of rain, like the predominance of the South wind, and the extraordinary abundance of fish and bird-fishers upon the coasts, did not escape the attention of the first Spaniards who trod the Peruvian soil. One of the historians, who was also one of the actors of the conquest, *Augustina Zarate*, wrote in the sixteenth century thus—"Those who have carefully examined the thing, pretend that the natural cause of this phenomenon (the want of rain) is the South wind which reigns during the whole year on the coasts, and in the plains, where it blows with so much violence that it carries off the vapors which rise from the earth and the sea, without being able to rise high enough in the air to collect together and form drops of rain. The same wind is also the cause that makes the waters of the South sea, run always towards the North, which renders difficult the crossing from Panama to Peru."

"In the valley in which Lima is situated," adds Zarate, "the stay is very agreeable, because in no season are they incommoded with either cold or heat. During the four months in which they have summer in Spain, they feel a little more coolness than is felt during the rest of the year ; and there falls there towards noon, a sort of small dew, something like the fogs which are seen at Valladolid.

"All along the coast are found fish of every species, especially sea-calves, which are the pastures of the vultures. There are also birds called *alcatras*, resembling our fowls. They are very common, since we see them everywhere over a space of over 3,000 leagues. These birds feed on sea-fish."

Under so constant a climate, upon a soil not modified by the corrosive action of aqueous meteors, on shores where the tides are scarcely perceptible, where we nowhere see invading downs, the face of nature is unchangeable. In 1832, upon these shores, bathed by the Pacific Ocean, I was present at those same scenes that Ulloa, Fraisir, and long before them, Zarate, had described—alcatras, phenicopterus, ardias, &c., as under the reign of the Incas. At the Piura we still found water, on digging in the bed of the dried torrent. At Checope it had not rained for 88 years The Rio Tumbez enters into the sea with the same calm ; and, perhaps, in seeking further, we should have recognized upon its shores the traces left by that handful of intrepid soldiers, who cleared it in 1531, in order to execute, with a brilliant success, the most audacious enterprize that was ever attempted. The bands of Almagro and Pizarro, had passed by there, to go and invade Peru ; and not one of those bold companions deigned to cast a look upon those huaneras, the importance of which now exceeds that of the most productive mines of the new world.

The interesting Grodesie works, executed by M. Francisco Rivero, give for the volume of guano, in the huaneras in 1844—

	Square Varas.	Cubic Varas.
Huaneras of the South	713,637	15,852,813
Guano de Punta Grand and Guano already extracted		6,157,185
Islands of Chincha....	1,450,244	34,500,000
Huaneras de Viegas y Caretas Ballesta.....		60,000
		* 58,560,000

* Or 62,259,209 cubic yards.

M. F. de Rivero has found the weight of the cubic varas to be about 1,400 pounds, Spanish, or 645 kilogrammes. This gives us for the existing weight of guano in the huaneras, 378 metrical quintals (or 37,800,000 tons.)

This estimate does not comprise the deposits to the south of the Rio-Loa- because they belong to Chili, nor those which are known to the

north of the *Chincha* Isles, as far as Payta, where I have seen them lying on the black argillaceous schist, the summits of which, seen at a distance, appear to be covered with snow.

The deposits of guano are so considerable that we have doubted whether they were very recently formed, by excrements of birds belonging to the present period. Humboldt was greatly inclined to consider them as antedeluvian, like masses of coprolites, having preserved their original organic matter. He went back beyond the age that must be assigned to these deposits, the thickness of which sometimes reaches 30 metres, because he computed that in three centuries, the excreta of the birds frequenting the isles of Chincha would not exceed one-tenth of a metre in thickness.

M. F. de Rivero, on the contrary, thinks that this prodigious accumulation of guano is very naturally explained by the multitude of *guanas* indicated on the coast of Peru under the names of *piqueros, sarcillos, gaviolas, alcatruas, pagurarninos, patillos, &c.* "If now" he says, "in spite of the disturbances the guanas have suffered, and still suffer, we nevertheless see thousands of millions of them resting upon the cliffs or the sharp summits of the islands, what was the case before the occupation of Peru by the Spaniards, when they were, we may say, the only inhabitants of the coast?" He adds that, in order to conceive the formation of the guano of the Chincha Islands, estimated at 500 millions of Spanish quintals, it is sufficient to admit, what is no exaggeration, that one guana, returns each night an ounce of excrement, and that every twenty-four hours 264,000 of these birds frequent the *huaneras*. In 6,000 years—M. F. de Rivero does not go beyond the date of the Deluge—the guano deposited would weigh 361 millions of quintals; and we must not forget that to the excreta, are necessarily added the remains of the birds. 264,000 guanas inhabiting at once the Chincha Islands are a number which no one would hesitate to accept, who has seen in motion those clouds of fowls of which, to use the expression of Ulloa, "we can perceive neither the beginning nor the end," which darken the air, and skimming over the sea, hinder the manœuvres of a ship. This number is, besides, subject to a kind of control. The guanas fish only during the day; at night, they retire into the *huaneras*, upon the hypothesis of M. de Rivero, the Chincha Islands receive 264,000 of them; the question therefore is, whether the place is large enough for them? Now, the surface of these islands is 1,450,224 square veras. A guana might, therefore, occupy 5½ veras, or nearley 4 square metres (4 yards,) on which they would repose perfectly at their ease.

Whether the guano belongs to the present era or that it may have been deposited at a former period, still it represents an enormous mass of organic substances, having belonged to the inhabitants of the ocean; and as the excreta are derived from the aliments—the fish destroyed by the bird-fishers being the first material of them—all the elements buried in the *huaneras* have undoubtedly made part of their organization, and it is not impossible to estimate the quantity of fish that has been consumed. In neglecting what a sea-bird dissipates during respiratory combustion, we are authorized to believe that nearly the total quantity of the azote of the food is found in the excreta, and consequently in the ammoniacal guano, which is only another form of the same substance, preserved by the effect of the particular circumstances on which I have previously insisted. The albumen and uric acid have undoubtedly given place to a production of ammonia, or have experienced other modificatinns in which are azote, which enters into the fæces of the *guanas*, and, of necessity, into the fish digested by these birds. A given weight of ammoniacal guana should therefore have for its equivalent, a certain weight of fish in which will be contained the same amount of azote.

The guano of Peru, when it comes to be extracted, if not injured, contains as we have seen, an average of about 14 per cent. of azote. From researches that I have made some time back, I am authorized to assume that the fish on leaving the sea contain 2.3 per cent of azote.

Thus 100 kilogrammes of guano contain the azote of 600 kilogrammes of sea-fish; and since in the *huaneras*, before we had so actively conducted the working of them, there were 378 millions of metrical quintals of guano, we must have for equivalent 2,268 million quintals (264 million tons) of sea-fish.

Such should be, in fact, the enormous quantity of fish devoured in the course of ages by a succession of *uninterrupted generations of guanas*, and the 53 million of quintals of azote which are found there had really belonged to the atmosphere; for the azote as I have announced some time back, has no other primitive origin; here is the proof:

Organized beings have in their constitution, independently of mineral salts, carbon, the elements of water, and azote. Carbon in the Carbonates and graphite belong to the most ancient formations. Pure carbon—the diamond—accompanies gold and platina in the detritus of granite, gneiss, and syenites. Water according to the fine experiments of Mons. de Senarmont and Daubree, has acted an important part in the metamorphosis of the crystalline earths. Of the elements of organism, azote, is therefore the only one that we do not find fixed in the rocks of igneous orign; we see it apparently in the sedimentary deposits where there are vestiges of beings having vegetated or breathed upon the earth; and all induces us to think that it has not penetrated into the tissues of plants, aud consequently into those of animals, after having been transformed into nitric acid or ammonia—states under which we continually meet with it in the atmosphere.

Like the coal and peat deposits, the bone diluviums and coprolites, the *huaneras* conceal, by holding these in some respects under sequestration, materials of the old world which man, in his incessant activity, brings out in the modern world. On fertilizing a field with these products, he changes into food, the excrements of seabirds; just as in burning mineral combustibles, we restore to the atmosphere carbon, aqueous vapor, and azote, which the vegetation of the coal period had extracted from it. This is what was expressed with as much intelligence as truth by an illustrious English engineer—George Stephenson—on seeing pass swiftly a train on one of the numerous railways he had constructed: "It is not," said he, "those powerful locomotives directed by our skilful engineers that makes that train proceed; it is the light of the sun—the light which myriads of years since disengaged the carbon from the carbonic acid, in order to fix it in plants, which a revolution of the globe has modified into coal."

The restorations of the old world have not been confined to the aerian ocean only, but have been extended to the soil. The *huaneras* contain mineral substances, among which figures the calcareous phosphates. In the guano containing the most ammonia, from *Angamos* or the isles of *Chincha*, there is not less than 25 per cent.; the earth guanos are almost entirely composed of it, and we may, without exaggeration, estimate the phosphate of lime of those beds at 25 millions of metrical quintals (2,500,000 tons), which is sufficient to form the osseous systems of four billions of men; and yet is not really more than a small portion of the phosphates spread over the several stages of the geological series. In the guano, all the phosphate has necessarily the fish consumed by the *guanas* for its origin, or to go to the extreme source, the earth; which has led M. Elie de Beaumont to say with great justice of observation, that in other organizations "the azote comes from above, the phosphates from beneath it."

Of the materials accumulated in these ossuaries of primitive times, which we meet with in the Jurasic and neocomian chalk in the green sandstones, in the caverns anciently inhabited by generations of flesh-eaters, the coprolites have had since 1847 only a purely scientific interest; but immediately that chemistry had pointed out their value in phosphoric acid, we understood that to a certain extent they should act as guano, and hence they are eagerly sought after. At present, European agriculture obtains these phosphates from the extremities of the globe; from the Islands of the Pacific Ocean, from the Caribbean sea, from the gulf of Mexico, from the coast of Africa, and from Australia. To procure it, the navigators bring away banks of coral, and reefs which were formerly avoided as dangerous places.

May I be allowed, in conclusion, to state before the Academy of Sciences, that this grand commercial movement, the result of which is the diffusion of fertilizing matters, has had its sole origin in an observation made by an eminent geologist, Dr. Buckland, and the very remarkable analysis of one of its most distinguished members, M. Berthier.

BOUSSINGAULT,
Member of the Academy of Sciences and of the Imperial and Central Society of Agriculture.

York Township Agricultural Society.

CARROT MATCH—DINNER.

The York Township Agricultural Society have for the past few years been in the habit of giving prizes for the largest and best cultivated crops of carrots in the township. The match for this year having been brought to a successful termination a few days ago, the judges—Messrs. John Gray and Geo. Ward—were entertained at dinner last evening by the president, directors and members of the Society in Mr. Best's Bay Horse Hotel, Yonge Street—the President, Joseph Ross, Esq., in the chair. Among those present were Prof. Buckland, Dr. Ross, Messrs. Rice Lewis, Philip Armstrong, George Severn, James Fleming, Jackes, Lee, McCarter, Palmer, T. H. Bull, and Capt. Snider. After the company had paid their respects to a substantial dinner served up in good style by Mr. Best, the Chairman proposed the toast of "the Queen," and the usual loyal and patriotic toasts, all of which were most enthusiastically responded to. He then called upon Mr. John Gray, one of the judges, to read the following

REPORT OF THE JUDGES ON THE CARROT MATCH OF THE TOWNSHIP OF YORK AGRICULTURAL SOCIETY

To the President and Directors,—

GENTLEMEN.—In accordance with your desire the undersigned judges appointed by your Society, to examine and determine on the best crop of Carrots grown by the competitors in the above match, beg leave to report:

On the morning of the 6th inst., we proceeded to the performance of the duties assigned to us, and having, in the most careful manner, examined the several lots presented for our inspection, we find that they stand in the following order, viz.:—

First,—W. H. Bartlett, Esq., Davenport road: 487 pounds, or 8 bushels and 7 pounds of 60 pounds to the bushel, to the square rod; equal to 1,298 bushels and 40 pounds per acre. This crop was grown on low, flat land; a good dark loamy soil, apparently well drained. Cul-

tivated on the flat or garden system ; drills from 16 to 22 inches apart ; crop very regular.

Second,—Robt. Stibbard, Esq., Eglinton ; 408 pounds, or 6 bushels and 48 pounds to the square rod ; equal to 1,088 bushels to the acre. The soil on which this crop was grown was of quite an opposite character to the former, being a light sandy soil, considerably elevated. The ground had been heavily manured and cultivated on the garden system. Drills 18 inches apart.

Third,—Philip Armstrong, Esq., Yonge street; 384 pounds, or 6 bushels and 24 pounds to the rod, equal to 1,024 bushels to the acre. Soil a good deep yellow loam; previous crop potatoes ; no manure applied to either crop ; drills 2 feet apart. The hoeing of this crop was done with the cultivator, and afterwards landed with the plough ; the roots were large and of very uniform size, and were apparently well managed in the cultivation. If we take into consideration the economical manner in which this crop was cultivated, being strictly field culture, it has produced, in proportion to the labour, the most profitable results.

Fourth,—Wm. Jackes. Esq., Eglington ; 346 pounds, or 5 bushels and 46 pounds to the rod, equal to 922 bushels and 40 poands to the acre; soil a deep loam ; drills 18 inches apart ; many of the roots upwards of two feet in length ; a good many blanks in the rows.

Fifth,—Wm. Lea, Esq., near the Don ; 315 pounds, or 5 bushels and 15 pounds to the square rod, equal to 840 bushels to the acre ; soil a deep sandy loam ; rows 21 inches apart ; roots never thinned, consequently they were small.

Sixth,—J. McCarter, Esq., Eglington ; 313 pounds, or 5 bushels and 13 pounds to the rod, equal to 834 bushels and 40 pounds to the acre. This crop was grown on both sides of a narrow ravine ; soil a yellow loam ; apparently a good crop ; rows 17 inches apart.

Seventh,—James Metcalfe, Esq., Yonge street; 290 pounds or 4 bushels and 50 pounds to the rod, equal to 773 bushels and 20 pounds to the acre. It being dark when we arrived at Mr. Metcalfe's crop, we measured off the first square rod we came to. We may have, therefore, unintentionally done injustice. The roots were large, but stood rather thin on the ground in consequence of having been thinned out with the hoe. We were informed that the best of the crop was gathered up, and was said to be better than what we examined. We regret that our time was so limited, which prevented us from taking more copious notes as to the cost and management of the various crops that we examined. The variety of carrot was in all cases the White Belgian, and was sown in the early part of May. Our information led us to believe that very little manure was applied to any of the crops except Mr. Hibbard's, but on his soil it would be impossible to grow a good crop without plenty of manure. The crops were all clean and apparently well managed.

In conclusion we congratulate the competitors on their success, and hope it will be an inducement to others to follow their example.

We remain, Gentlemen,
Your obedient servants,

JOHN GRAY,
GEORGE WARD.

Only the first three mentioned take prizes.—*Globe.*

Horticultural.

A Green Rose.—The London Gardeners' Chronicle thus describes a novelty among roses, which has been successfully grown in France and England: Conceive a China Rose, with every part bright green, deep on the outside, pallid in the middle; the calyx wholly unchanged; the five natural petals transformed into five small, broad green leaves, and the rest of the center consisting of pale green straps of various degrees of narrowness, spreading evenly round the middle, and forming a green star, with innumerable points. Such is the Rose Bengale verte. It has no scent, and does not show the least inclination to exchange its verdure for a rosy hue. Its quite regular in its form and greenness, no change having been remarked in it since the year of its birth. It is now a well-established five-year old plant, with a fixed habit. Although this has no great beauty in itself, it is considered possible that by hybridizing, new varieties may be obtained, combining the parent colors, red, white and green, and thus new beauty be added to the Queen of Flowers.

Liquid Manure should be applied to plants while their roots are in a state of activity, because then they absorb it readily, and at once ; and the clearer it is the better. In this state the plant's food may be said to be prepared for its immediate purpose. When manure is applied in a solid form it cannot be taken up by the spongiolets until it is rendered soluble—that is, reduced to a liquid state. The drainage which so often runs to waste from dung-hills, stables, water-closets, poultry-houses, &c., in its natural state, contains too much insoluble matter, which lies on the surface of the soil until it becomes soluble by rain and exposure, and hence it is a considerable time before the plants derive any benefit from it. Besides, in its natural state, it is too strong, and often hurtful to tender plants. Therefore, all such valuable material should be conveyed to tanks, in which it undergoes fermentation, attenuation, and solubility, before it is in a fit state to be applied to advantage.—*Scottish Horticulturist.*

Veterinary.

Ecxema—An Itchy Eruption of the Skin.

During the hot months of summer many horses are subject to an intolerable itching, which becomes much worse when the animals are heated, and, indeed, sometimes renders them perfectly unmanageable. They will rub themselves until the skin is sore and raw, and often become so violent that travest posts and mangers are levelled to the ground. To superficial observation the skin presents nothing remarkable, but closer inspection will discover numbers of minute elevations closely aggregated, and filled with a watery fluid. Soon the skin becomes thickened, red, and angry-looking, and the hair dry, soft, and bristling. The surface is sometimes unusually hot and dry; at other times it is endowed with clear, and sometimes with bloody fluid. Coarsely-bred horses are generally believed to be most subject to this complaint, and the quarters and hind limbs, especially on the inside, are usually first and worst affected. Where once it has appeared it is very apt to recur as soon as the hot weather sets in; and as it returns year by year, each attack becomes more severe than the preceding, and renders the animal for the time worthless. This complaint is perfectly distinct from mange, which is characterised by extreme scurviness, and subsequent bareness of the skin, and has never any of the little vesicles or fiery redness of the ecxema. Surfeit may be mistaken for it; but comes and goes more rapidly, consists of tumours about the size of peas or marbles, spreads over most parts of the body, occurs mostly in spring and autumn, and is not necessarily accompanied by itching.

The causes of ecxema are very obscure. Rich, generous feeding helps to develope it; whilst on the other hand, plenty of fresh green food greatly prevents it. But there are certain horses that have such an inherent tendency to it that it affects them under every kind of feeding. In such animals the symptoms speedily show themselves if they be smartly exercised even in tolerable cool weather. The eruption appears to be a symptom and consequence of a peculiar state of the blood.

Ecxema is probably the most intractable of skin diseases. The sulphur ointment and tar liniments by which, with comparative ease, we can cure cases of mange, are here quite fruitless. Even solutions of chloride of lime or bleaching powder, so highly recommended by some practitioners, are of little avail, and relieve the itching, without removing the disease. Chloride of zinc is more effectual, and may be conveniently used in the form of Sir William Burnett's disinfectant fluid. Diluted with forty or fifty parts of water, it is rubbed into the itching parts with a brush two or three times a day. Two or three applications usually remove the itching, whilst the skin after a few days resumes its healthy appearance. A solution of corrosive sublimate, containing twelve or fifteen grains to an ounce of water, is also often useful The compound solution of iodine, diluted with four or five parts of water, is frequently used with advantage both locally and internally. As in the corresponding complaint in man, alkaline solutions are sometimes serviceable, and the common carbonate of soda may be conveniently applied, dissolved in twenty parts of water. Mercurial and iodine ointments, although frequently recommended, are of trifling value. Besides the local remedies, a mild dose or two of laxative medicine must be given, and the animal restricted to light, digestible, and stimulating diet. Nothing expedites a cure or prevents a recurrence of the attack better than the liberal use of good green food. Whilst, on the other hand, nothing is more likely to develope the disease than the continued use of large quantities of beans and oats, given without an occasional allowance of bran, nitre, roots, or green food. Under careful supervision, a few doses of arsenic may be given internally, and the medicine is best used in the form of Fowler's solution, of which an ounce may be given daily. As in almost every other disease, blood-letting has been frequently tried, but is now properly considered useless. In addition to the medical treatment, strict attention must be paid to cleanliness, want of which always aggravates, and is by some considered a direct cause of the complaint. Particles of dust or sand, and more especially if of an irritating clay or aluminous nature, adhere to the skin, and, if unremoved, are believed to favour the production of the complaint.

Ecxema is rather more prevalent amongst dogs than amongst horses. The symptoms, appearances, and causes are analogous, and similar treatment is requisite.—*North British Agriculturist.*

The Provincial Exhibition,

Held at London, September 1861.

Reported by Mr. William O'Brien.

(*Continued from page* 671.)

Grain and Seeds.—With very few exceptions the show of grain was, as has been already stated, a very indifferent one. The discreditable trick of a farmer of the name of Anderson, from Flamborough, who attempted to secure for himself the Canada Company's prize of £25 for the best twenty-five bushels of fall wheat, by placing a small lot at the top of each bag, much superior in appearance to the bulk of the sample, was widely exposed by the newspaper press at the time, and it is unnecessary here

to say anything further upon such a very unpleasant topic. It is to be hoped that the humiliating position in which the perpetrator of this fraud was placed will be a sufficient warning to deter any others so disposed, from attempting to commit a similar act of dishonesty in future. We trust, however, for the credit of our farmers, that there are few amongst them capable of so disreputable a proceeding, although it does appear that, even at London, Anderson was not altogether alone in his guilt, as another man was detected in the commission of a similar offence, in the competition for the two-bushel prize. For the Canada Company's prize, there were only ten competitors, one of them being the Anderson alluded to above, against three times that number last year; and the quality of grain was also decidedly inferior, although one or two samples were as good as could be desired. The falling off in the two-bushel samples was, as compared with last year, about in the same proportion. Of spring wheat, we should certainly have expected a better display, as there is better wheat in some parts of the country than we saw in any of the seventeen bags shown at London. Some of the grain was excellent as regards size, but it was all dark and coarse. The best show, in this department, was that of white oats, of which there were some twenty excellent samples; the grain being plump and bright, The black oats, on the other hand, were very inferior. Of field peas, there were not more than a dozen samples of the small kind, and as many of marrowfats. The former were with a few exceptions, of fair and even quality; but by no means remarkably fine. The latter were by no means above the average.

Field beans made a much better display than peas,. Nine samples were shown of an excellent quality; and both the first and second prizes were taken by farmers in the neighbourhood of London.

The barley shown appeared to us to be of very indifferent quality, both as regards plumpness and color. Among the extras, there was an entry of Winter Barley. Of Rye there were only three samples shown.

The barrenness of this part of the show was somewhat relieved by the Indian Corn, of which there were some fine specimens, especially of the yellow variety.

Among the seeds we noticed some bags of Rye Grass, not the Italian, grown by Mr. McPherson of Westminster. It is a generally received opinion that the common Rye Grass will not stand the winter in this country, but the grower of this seed assured us that he had proved the contrary. The Italian Rye grass answers exceedingly well, as the writer of this can testify, having it in a meadow laid down for four or five years. Of Alsike Clover there was but little shown, but of the other kinds, there was a tolerable display, as well of Timothy seed. Of Millet, there was a good variety; and of Hungarian grass, a kind new to most of our farmers, but very much resembling common Foxtail, there was a number of specimens. Of Flax seed, there was a good display. Of Buckwheat, we saw only three samples. Hemp seed, Carrot, and Turnip seed, were also tolerably well represented.

As far as we could judge, there was a pretty good display of hops, of which thirteen bales were on exhibition, apparently of good quality. The first prize for this valuable article of consumption, was awarded to J. Stevenson of Dundas.

Roots, (field grown.) The least said of the display of field grown roots the soonest mended, for it was in every way unworthy of a Provincial Exhibition, and as little to be compared with that of last year as was the show of grain. With the exception of a few lots of mangel wurzel there was really nothing worth mentioning, quantity and quality being alike indifferent.

The Dairy.—The dairy was well represented, both as regards butter and cheese, the latter in particular; it speaks well for the grazing properties of the London and Western Districts, that most of the prizes in both of these articles were taken by farmers living within their limits. Mr. Thomas Shore, of London, took the first prize for butter, and Mr. Ranney, of Salford, the first for cheese.

Honey.—The show of honey was remarkably good, both of clear, and in the comb. The first prize for the former was awarded to Mr. G. Miller, Markham, and for the latter to Mr. McKee, of Norwich.

HORTICULTURAL PRODUCTS.

Garden Vegetables.—The show of garden vegetables may be summarily dismissed along with that of the field-grown roots. It spoke very little for the Association, and not much more for the good gardeners who we may presume to abound in the vicinity of a town like London. They at any rate were

the principal exhibitors, and to them the credit or discredit must belong.

Fruit.—The show of fruit was considered very fair, though by no means equal to the magnificent display of last year. Its most important feature was the steady advance shown in the cultivation of the grape, in reference to which, as well as to the show of fruit generally we have taken the liberty of copying from the London *Free Press* the following remarks from the pen of a gentleman well qualified to pronounce an opinion upon a matter of so much interest to our farmers and agriculturists :—

"It is evident, on a very casual inspection of the contents of the exhibition, that the western portion of Upper Canada has passed far beyond the stage of development in which the people are occupied in producing articles of necessity. The horticultural department displays fruits that would do credit to any country at any stage of existence; but one branch of culture deserves especial notice, from the ingenuity, and aptitude of the gardener as well from the success he has attained, as from the promise of future wealth both to himself and the country, clearly discernable through what he has already accomplished. We draw attention to the grapes exhibited by "Mr. Read, of Port Dalhousie," who has confined his efforts entirely to those varieties suitable for out door unprotected cultivation. By a judicious and careful system of crossing the best American vines with the most promising species of Europe, he has produced some highly valuable grapes, which will endure the rigours of our winter climate, and ripen fruit of an appearance, size, and flavour quite equal to many, and superior to some, of the dessert grapes of the old world. The variety he has, called "Ontario," a hybrid between the Isabella and Black Hamburgh, is a handsome, large, and excellent grape, retaining a slight flavour of the Isabella murkiness, and growing in bunches of two or three pounds weight, and of the size of the hot-house fruits of England. Another variety, the "Prince of Wales," promises, after a few more years of cultivation, to excel the Ontario, and it is without the murkiness of the Isabella. There are others wanting only perseverance in cultivation to become valuable, not only for dessert, but as wine producing fruit. Some have the roughness of the Oporto grape; others have the sweetness of the Constantia; nearly all of them would have been improved by one more fortnight on the tree. It is obvious that if the ripening could be accelerated a fortnight the value would be largely increased, and the chance of injury from rain and frost of late Septembers avoided; we think this would be accomplished by a different mode of cultivation. At present the vines are trained on trelisses or on trees, a mode of growth suited to countries with long warm summers, and followed in Italy and Spain; but in more northern regions with short hot summers, the plants are usually pruned like currant bushes, and freed from many of their leaves, to allow the sun full access to the fruit and *also to the ground*, a most important point, as the heat reflected from the warm soil contributes largely to the speedy ripening of the grape, and this mode of cultivation compensates for the greater severity of northern climates. Care has to be taken when the fruit is intended for wine making, that the branches do not touch the soil or receive the mud splashed up by the Autumn showers, for if such branches are carelessly thrown into the vat, the wine will have that horrible earthy flavor characteristic of bad Cape wine. If Mr. Read will try this method of pruning his plants, he will gain a fortnight in the time of ripening and add greatly to the flavor, by ripening in the warm sun of August instead of the cooler beams of September. We hope his success will encourage the people of this part of Canada to plant many favorable aspects of their lots with vines, and by so doing add as much to their profits as to their luxuries.

"Dr. Beadle of St. Catherines, an old and experienced raiser of fruit trees, was a competitor for the prize awarded for the best six of each kind, twenty varieties of apples. They were all very excellent. The following were some of the varieties on exhibition: —Northern Spy, Maiden Blush, Gravenstein Swaar, Hubberston Nonsuch, Seek no Further, E. Spitzenburg, Pomme de Neige, Greenings, &c. Pears, including the best varieties, as Vicar of Wakefield, Glout Morceau, Stevens' Genessee, Louise bonne de Jersey, &c. Dr. Beadle's varieties of fruit are very beautiful. The Dr. has the largest display of fruit of all kinds—three of each variety. His display of grapes was also good.

"Mr. Alexander Leslie, Proof Line, Township of London, whose nursery is only six years old, shows well. His apples and pears seem excellent. Mr. Leslie has to make his

status, which he seems well qualified to do. His nursery is on high ground, well exposed, and his fruit trees no doubt will be well suited for transportation to other parts of this western section of country. Mr. Leslie is a competitor for the best twenty varieties of apples, and exhibits the following:—Duchess of Oxenburg, Fameuse, Baldwin, Greening, Northern Spy. Many of these look well, and are of good flavor. Mr. Leslie is one of those who pays particular attention to his graftings, that every tree may be true to its kind. This is the great object to be kept in view by fruit raisers, and if farmers and nursery men will only be at the trouble to pay strict attention to this important branch of horticulture, they will ultimately reap the full benefit of their care and discrimination."

Messrs Elwanger & Barry of Rochester, by R. Blair, agent, have on show sixty-two varieties of apples of very superior quality, and eighty varieties of pears, with eight specimens of native grapes. Amongst the latter are the celebrated Delaware and Rebecca sorts, which looked very superior. Not being raised in Canada, the fruit was ineligible for prizes. Six bottles of white grape currant wine were also shown by this firm; and 200 varieties of roses and other flowers, all of which elicited much well deserved commendation. Messrs. Elwanger & Barry are celebrated nurserymen, and their reputation for growing trees true to their kind is well established.

"Mr. Arnold, of Paris, an old exhibitor, has also a beautiful display of grapes. His plums are superior to anything exhibited.—Mr. Arnold has also a specimen of wine, made from grapes without the addition of sugar or alcohol. Mr. Arnold's varieties of grapes, Concord, Diana, and Rebecca, are indeed beautiful."

The first prize for the best display of fruit, not more than three specimens of each sort, was awarded to Mr. G. Leslie, of Toronto, whose collection was, indeed, of the choicest character.

Besides the exhibitors above mentioned, there were a number of amateurs from different parts of the country who succeeded in carrying of several prizes. Among them we may especially mention Mr. J. D. Humphreys, of Toronto, Mr. H. J. Brown, of Niagara, and Mr. J. Freed, of Hamilton.

Plants and Flowers.—This part of the show is seldom equal to exhibitions intended especially for the display of horticultural productions. Parties at a distance do not like to export their choicest things to the risk of a journey in a crowded train, to say nothing of the trouble of transporting such delicate articles as green-house plants in any considerable number. The display is therefore generally meagre, and in this instance there was no exception to the rule, as the gardens at London are not sufficiently advanced to make very much of a show out of their own resources. The principal exhibitors were, Messrs. G. Leslie, J. M. Hirsefelder, and J. Fleming, of Toronto; J. Pegler, G. Haigh, and D. Kemster, of London; and Bruce and Murray, of Hamilton.

AFRICULTURAL IMPLEMENTS.

The show of agricultural implements was all that could be desired. In several of the articles exhibited we noticed manifest improvements, and in all a steady advance in workmanship and general adaptability. Portable engines for farm use, threshing machines, mowers and reapers in great variety, clover threshers, straw cutters, cultivators, seed drills, turnip drills, liquid manure drills, ploughs of all descriptions, draining implements, and a number of minor articles,—all proved in the most satisfactory manner how well our mechanics have learned to provide for the wants of the farmer, and how largely our farmers have found it to their interests to avail themselves of the ingenuity of the mechanic. In this part of the exhibition the mechanics of London appeared to great advantage. Among them we may notice Mr. Murray Anderson, with his well-finished ploughs, cultivators, horse rakes, &c.; Mr. Elliott, of the Phœnix foundry, with a large display of similar artices; Mr. Leonard, with an improved mower and reaper; Pavey & White, straw cutters, cultivators, and horse-shoes; and Mr. Wade with cultivators and scarifiers. Many others of the flourishing towns and villages of the West also sent mechanical representatives who did them infinite credit. From Paris, Messrs. Maxwell & Connell came with some excellent straw cutters, a seed drill, and a liquid manure drill. From Brantford, Ganson Waterous & Co. brought a very valuable and extensive collection of implements. Mr. Watson, of Ayr, displaying a capital threshing machine of well-proved excellence. Mowers and reapers there were of every pattern, and

from a number of places, chiefly west of Hamilton; but as there was no provision for testing their comparative merits, any mere description of them is of little value. We may remark in conclusion, that apart from the value of this part of the show as proving a general advance in the application of mechanical skill to agricultural purposes, it was also important as showing how generally this progress has been made, as the articles exhibited were almost entirely made in the district lying west of Hamilton,—several Eastern makers of great repute not being exhibitors at all.

Trial of Ploughs.—As it is utterly useless for any set of Judges, however competent, to attempt to decide upon the relative value of different specimens of any class of agricultural implements without actual trial, we were glad that the ploughs entered for exhibition were to be regularly tested and their draft ascertained. For this purpose a nice piece of sod was obtained a little way out of the town, to which the judges and competitors repaired shortly after noon on Thursday. The method adopted for testing the ploughs was as follows:—each competitor was called upon to plough two rounds with a man and team of his own selection, with the expectation, of course, that the quality of the work of which the plough was capable would be thus shown to the best advantage. The judges then applied the instrument to each plough in succession, turning four furrows with each by a man and team employed by them for the job, carefully measuring the draft, and also noting the quality of the work. Six inches was the depth required, and nine the width of the slice, and the draft was only measured when these conditions were strictly fulfilled, and we mayhere mention that the ploughman employed, James King, of Toronto, did his share of the work in the most satisfactory manner, and as may be supposed, it was no easy task to change thus from one plough to another, and yet do fair justice to their respective merits. The result of the experiment will no doubt have been disappointing to many of the competitors, who never having proved the draft of their ploughs, were unaware of their real defects, and judged of them merely by the excellence of their finish, and their general reputation among their customers.

The following is the list of the competitors, giving the draft of each plough, and the remarks of the judges upon its performance:—

Iron Ploughs.—J. Mahaffy, Brampton, draft 364 lbs., work very superior.

John Gray, Egmondville, Huron Co., draft 441 lbs., work good.

G. Morley, Thorld, draft 444 lbs., good work.

J. McSherry, St. Davids, draft 481 lbs., work very good.

—— Holton, draft 271, but bad work and under depth. [Note by the Reporter—When this plough was first tried it seemed to do pretty well, but an alteration in the irons by the maker threw it altogether out of order.]

W. Alexander, Falkirk, draft 351, work inferior.

G. Morley, Thorold; draft 382, work passable.

J. McSherry, St. Davids; draft 494, work passable, false cut.

George McSherry, Brownsville, Oxford; draft 479, work passable.

George Grey, Stratford; draft 428, work fair, but rather light in depth.

Wooden Ploughs.—J. Mahaffy, Brampton; draft 366, work very good.

James Walker, Westminster; draft 377, work good.

G. Morley, Thorold; draft ——, work good.

James Wright, London; draft 388, work indifferent.

Murray Anderson, London; draft 447, (furrow $6\frac{1}{2}$ by $9\frac{1}{2}$,) work bad.

John Elliott, London; draft 446, (furrow $6\frac{1}{2}$ by $9\frac{1}{2}$,) work bad, mouldboard crushed furrow.

John Elliott, London; draft 425, work ordinary.

Thomas Deland, Port Hope; draft 359, work indifferent.

George Jackson, London; draft 429, (furrow $5\frac{1}{2}$ by 8,) under depth.

G. Modeland, Brampton; draft 394, (furrow $5\frac{1}{2}$ by 9,) work good, but false cut.

J. McSherry, St. Davids; draft 383, work very fair, square furrow.

McLaren, Lowville; draft 408, work good.

The first prize, therefore, both for wood and iron plows, was awarded to J. Mahaffy, of Brampton, and it is remarkable that there was only two pounds difference in the draft of his two plows, the one of wood and the other of iron, and both from the same pattern,

the utmost draft being only 366 lbs. The plows, both for light draft and good work being far in advance of any of the rest. The second prize for iron plows was awarded to John Gray, of Egmondville, with a draft of 441 lbs., and the third, to G. Morley, of Thorold, with a draft of 444 lbs.

The second prize for wooden plows was awarded to Jas. Walker, of Westminster, draft 377 lbs., and the third to G. Morley, Thorold.

CONCLUSION.

Of that part of the exhibition which comes under the head of Arts and Manufctures, we can say but little, the pressure of work outside preventing much notice of those articles within the building, not especially interesting to the farming community. This, however, is of less consequence, as the Board of Arts and Manufactures have now a journal of their own, in which we presume they will give full details of that portion of the exhibition under their particular control. The proceedings wound up as usual with the annual meeting of the Association, at which that distinguished agriculturist, F. W. Stone, Esq. was elected President, A. A. Burnham, Esq., of Cobourg, 1st Vice-President, and J. Johnson, Esq., of Middlesex, 2nd Vice-President, Toronto was fixed upon as the next place of meeting for the Association. The retiring President then delivered the very excellent address, which has appeared in a previous number, and to which we beg to direct the especial attention of our readers.

[The Prize List will appear in our next, fully revised and corrected.—EDITOR.]

Miscellaneous.

INFORMATION ABOUT HYDROPHOBIA.—No person who has seen a case of hydrophobia can ever forget the painful scene. Of all the maladies to which human beings are exposed, this is perhaps the most mysterious, and it is surrounded with a dreadful interest. As there is a great deal of popular fallacy afloat respecting it, every item of reliable information and every gleam of light which can be thrown upon the subject deserve to be collected and placed before the public.

In the last number of *Blackwood*, there is a very profound essay on rabies, in which current ideas on this malady are shown to be not only inaccurate, but dangerously wrong. For example: it is commonly believed that rabies in dogs is peculiar to the warm months—the "dog days"—and in July and August great precautions are taken, which no person thinks of in November and December. "But" says the writer, "the dog days have no more to do with rabies than the moon with lunacy." In the veterinary schools of France, the records kept respecting the cause of hydrophobia show that a majority of cases have occured not in the hottest, but *wettest* months. In April, November and December, double the number of cases occured as compared with July and August. M. du Chaillu, the late African traveller, states that the most of the West African villages are crowded with dogs, but hydrophobia is unknown to the natives. In Cyprus and Egypt, which are also very hot and dry countries, the disease is unknown, thus showing that it is not at all produced by heat or dryness of atmosphere.

It is also supposed that all mad dogs foam at the mouth, and that they run about snapping at man and beast, manifesting great ferocity. There is only one stage of rabies in dogs in which they foam at the mouth, while healthy dogs foam frequently. Gentle dogs when affected with rabies, are generally gentle to their masters, but they will then snap at other dogs; it is only the ferocious dog that shows very great fierceness when rabid. It is also a popular belief that dogs attacked with rabies are afraid of water; hence, the name *hydrophobia* (horror of water) has been given to the malady. This is a misnomer, and the popular notion respecting it is a dangerous error. A burning thirst is one of the characteristic symptoms of rabies in its earlier stages, and when a dog laps water, and plunges into it, it is no sign, as some suppose, that he has not the disease. In man, during the latter stages of the disease, there is an undefinable dread of water, and hydrophobia is not inappropriate when applied to him; but in dogs, a dread of water does not show itself in one out of fifty cases. An acquaintance of ours once pursued a mad dog which had bitten some of his hogs in the barn-yard, when it plunged into a river of considerable breadth; it was then followed in a boat, and shot a distance from the further shore. This was in the early part of December, and there was snow upon the ground at the time. The weather, as it regards heat, had nothing to do with this case, and no fears of water were shown by the animal, thus disproving the two popular notions respecting the disease.

The writer in *Blackwood* states that it is as yet undecided whether rabies now occurs spontaneously, or is only the result of direct innoculation by biting, and it is not certain that every man and animal bitten by a mad dog will take the disease; but when it is once completely developed in a man, "the physician that cures is *Death*." Man or beast once infected with the poison is doomed to a certain and horrible death."

Mr Youatt the greatest authority on rabies in dogs, thinks that it does not now occur spontaneously, and he believes it may be extirpated everywhere if a thorough quarantine could be established on dogs. It appears to us that at least eighty out every hundred dogs in every community are of no use, and that it would be well to destroy just about this proportion of them.

The essayist says:—"All who are in charge of a dog may, by a little attention, discover the early symptoms of rabies, and prevent any mischief by sequestrating the animal in time. Is he fidgetty and sullen? Does he, when first ill, manifest importunate affection? Is he affected with hallucination? Does he exhibit ardent thirst? Does he scratch his ear violently? and does he paw the corners of his mouth without keeping the mouth permanently open? Does he refuse his natural food, and exhibit a depraved appetite? Is he insensible to pain, and his voice strangely altered? Any one of these symptoms should awaken suspicion, and a close observation will soon discover the true state of the case. We advise all our readers to commit this information respecting the symptoms to memory, as it may be of paramount importance at some future period."

The poison of rabies is not communicated by contagion, but innoculation with the saliva. One mysterious feature connected with this poison, is that after being bitten it may remain in the system for nearly a year before it developes itself. How it thus remains inert is unknown. When a person is bitten by a dog supposed to be mad, the only course to pursue is to cauterize the wound at once. It is a consoling fact that only one out of every three persons bitten by mad dogs have become affected with hydrophobia; still, the malady is so terrible and treacherous that eveay precaution should be used at all seasons of the year to prevent it.—*Scientific American.*

A Ten Mile Army of Ants, and their Exploits—We take the following description of the "Bashikouay"—or reddish brown African ant—from Du Chaillu's account of his African travels. "It is their habit to march through the forest in a long and regular line, about two inches broad and often ten miles in length. All along this line are larger ants, who act as officers, stand outside the ranks, and keep this singular army in order. If they come to a place where there are no trees to shelter them from the sun, whose heat they cannot bear, they immediately build underground tunnels, through which the whole army passes in columns to the forest beyond. These tunnels are four or five feet underground, and are used only in the heat of the day or during a storm. When they get hungry, the long file spreads itself through the forest in a front line, and devours all it comes to with a fury which is quite irresistible. The elephant and gorilla fly before this attack. The black men run for their lives. Every animal that lives in their line of march is chased. They seem to understand and act upon the tactics of Napoleon, and concentrate with great speed their heaviest forces upon the point of attack. In an incredible short space of time the mouse, or dog, or leopard, or deer is overwhelmed, killed, eaten, and the bare skeleton only remains. They seem to travel night and day. Many a time have I been awakened out of a sleep, and obliged to rush from the hut and into the water to save my life, and after all suffered intolerable agony from the bites of the advance guard, who had got into my clothes.—When they enter a house they clear it of all living things. Roaches are devoured in an instant. Rats and mice spring round the room in vain. An overwhelming force of ants kill a strong rat in less than a minute, in spite of the most frantic struggles, and in less than another minute its bones are stripped. Every living thing in the house is devoured. They will not touch vegetable matter. Thus they are in reality very useful (as well as dangerous) to the negroes, who have their huts cleared of all the abounding vermin, such as immense roaches and centipedes, at least several times a year.—When on their march, the insect world flies before them, and I have often had the approach of the bashikouay army heralded to me by this means. Wherever they go they make a clean sweep, even ascending to the tops of the highest trees in pursuit of their prey. Their manner of attack is an impetuous leap. Instantly the strong pincers are fastened, and they only let go when the piece gives way. At such times this little animal seems animated by a kind of fury, which causes it to disregard entirely its own safety, and seek only the conquest of its prey. The bite is very painful. The negroes relate that criminals were in former times exposed in the path of the bashikouay ants, as the most cruel manner of putting them to death. Two very remarkable practices of theirs remain to be related. When on their line of march they must cross a stream, they throw themselves across and form a tunnel—a living tunnel—connecting two trees or high bushes on opposite sides of the little stream. This is done with great speed, and is effected by a great number of ants, each of which clings with its fore claws to its next neighbour's body or hind claws. Thus they form a high, safe tubular bridge, through which the whole vast regiment marches in regular order. If disturbed, or if the arch is broken by the violence of some animal, they instantly attack the offender with the greatest animosity. The bashikouay have the sense of smell finely developed, as indeed have all the ants I know of, and they are guided very much by it. They are larger than any ant we have in America, being

at least half an inch long, and are armed with very powerful fore legs and sharp jaws, with which they bite. They are red or dark brown in colour. Their numbers are so great that one does not like to enter into calculations; but I have soon one continual line passing at good speed a particular place for twelve hours. The reader may imagine for himself how many millions on millions there may have been contained here."

Teaching Hogs to Destroy Thistles.—A writer in the *Southern Homestead* says: I will give a method of exterminating thistles which I have tested and found effectual, and which costs nothing. It consists in teaching hogs to eat the roots of the plant. Tramp on the buds of a goodly number of the largest plants in the spring, and place on each bud a teaspoonful of salt; then turn your hogs on them. They will eat the roots of the salted plants first, and will thus acquire a fondness for the roots, and will continue to eat them daily as long as any can be found. If but one hog be educated in this way, he will teach the whole herd to eat them, and they will exterminate all on the farm."

Mad Dogs.—All who are in charge of a dog may by a little attention, discover the early symptons of rabies, and prevent any mischief by sequestering the animal in time. Is he fidgety and sullen? Does he, when ill, manifest importunate affection? Is he affected with hallucination? Does he exhibit ardent thirst? Does he scratch his ear violently? Does he paw at the corners of his mouth, and not keep the mouth permanently open while doing so? Does he misconduct himself in the room, and pertinaceously lick at the corners where he has done so? Does he refuse his natural food, and exhibit a depraved appetite? Is he insensible to pain? Is his voice strangely altered? Any one of these symptons should awaken susicion, and a close observation will quickly discover the true state of the case. We advise all readers to commit these symptons to memory; to learn them as a lesson is learnt, which in after life, may be of permanent importance.—*Blackwood's Magazine.*

Power of a Horse's Scent.—There is one perception that a horse possesses that but little attention has been paid to, and that is the powe of scent. With some horses it is as acute as with the dog; and for the benefit of those that have to drive at night, such as physicians, and others, this is invaluable. I have never known it to fail, and I have driven hundreds of miles on dark nights; and in consideration of this power of scent, this is my simple advice: never check your horse at night, but give him a free head, and you may rest assured that he will never get off the road, and will carry you expeditiously and safe. In regard to the power of cent in the horse, I once knew one of a pair hat was stolen, and recovered mainly by the rack being traced out by his mate, and that after he had been absent six or eight hours.—*Homestead.*

Origin of Life.—Starting from this point, we may fairly enquire how and by what means this earth became the "procreant cradle" of organized existences? Was it by some process of secondary causation, or directly and at on e by the fiat of the Creator? Alas for the impotence of science, and the scope of our fin te intelligence Science cannot even indicate the line of inquiry —our highest philosophy is the humble recognition of the fact. The chemist and the physiologist may resolve the vital organism into cells, and granules, and nuclei, but here their efforts stop; they cannot endow these cells and germs with life, or cause them to assume the lowliest form of vegetable or animal existence. The "slime that mantles o'er the stagnant pool" —the simplest arrangement of cell growth that spreads over the surface of the decaying rock, are results beyond the proudest achievements of science. And even could we in any way connect these manifestations of life—lowly as they are—with the subtile agencies of heat, light and electricity, this would be only bringing us a little nearer, but not within the precincts of that mysterious shrine which science may not unveil, and before which the proudest philosophy can only humble itself and adore.—*Pages Past and Present Life of the Globe.*

Wisdom for Winter.—Never go to bed with cold or damp feet.

In going into colder air, keep the mouth resolutely closed, that by compelling the air to may circuitously through the head and nose, it may become warmed before it reaches the lungs, and thus prevent those shocks and sudden chills which sequently end in pleurisy, pneumonia and other serious forms of disease.

Never stand still a moment out of doors, especially at street corners after having walked even a short distance.

Never ride near the open window of a vehicle for a single half minute, especially if it has been preceeded by a walk; valuable lives have thus been lost, or good health permanently destroyed.

Never wear india rubber boots in cold dry weather.

Those who are easily chilled on going out of doors should have some cotton batting attached to the vest or outer garment, so as to protect the space between the shoulder-blades behind, the lungs being attached to the body at that point; a little there is worth five times the amount over the chest in front.

Never begin a journey until breakfast is eaten.

After speaking, singing or preaching, in a warm room in winter, do not leave it for at least ten minutes, and even then close the mouth, put on the gloves, wrap up the neck and put on a cloak

or overcoat before passing out of the door; the neglect of these has laid many a good and useful man in a premature grave.

Never speak under a hoarseness, especially if it requires an effort, or gives a hurting or painful feeling, for it often results in a permanent loss of voice or a long life of invalidism.—*Hall's Journal of Health.*

Horse-Stealing in Algeria.—The Arab who is projecting a master-stroke, and intends selecting the handsomest out of a thousand steeds usually comes in the course of the day to inspect the bivouac, although he is obliged to make his preliminary observations from a distance—from a very considerable distance, it may be. The natives, in fact, are allowed to penetrate easily into the middle of an encampment; but they are almost always people of the neighbourhood who form part of the expeditionary columns, such as camel-drivers, herdsmen, and pack-horse leaders, who have been hired for the transport of provisions. In the latter case, the Arab thief will be mistaken for one of the men employed; he will take good care that no one shall see him enter. His choice made the rogue disappears till night In order to return to the middle of the bivouac, he habitually divests himself of every item of clothing, and retains no other arm than a well-sharpened knife in a leather sheath slung with a strap across his body. He is also provided with a long rope of camel's hair, which is twisted round his head, like a turban. As soon as he has passed the first sentries the thief is metamorphosed into a serpent; he crawls on continually, without hurry, without noise, without any perceptible rustling. With his eyes fixed on the living objects whom he wishes to avoid, he stops short if he perceives in the sentinels the slightest sign that their attention has been attracted. He will take three hours, if need be, to clear a distance of a hundred yards. At last he gets near the coveted object, the horse intended to be stolen. There, his movements are more deliberate than ever, in order not to frighten the animal, who must not be allowed, for several minutes, to perform any but very natural motions, capable of deceiving the eye of the most vigilant sentinel. At first he cuts the shackels with which the horse's fore feet are tied together, he fastens his rope to one of the horse's feet and retires, crawling all the while, as far as the length of the rope allows him. The distance between himself and the animal then varies from twelve to fifteen feet. If, during these preparations, the horse-keepers appear to have heard any noise, the thief again remains motionless; the horse remaining quiet, and the sentinels resuming their former tranquility, the process of stealing is continued. The Arab slightly pulls the rope; solicited by this mute appeal, the horse rises and sets a step; but the movement is so perfectly similar to that which the animal is in the habit of making when he wants to reach a wisp of hay or a blade of grass a little way off the stake to which he is fastened, that, by night, nine sentinels out of ten would be deceived. The robber repeats the same manœuvre as long as possible. As he has carefully studied the ground, he will continue it while no alarm is given; but generally, once out of the immediate reach of the men whose duty it is to keep special watch over the stolen horse, he leaps on the animal's back, and sets off at a full gallop, well knowing that gun shots by night are only dangerous for the comrades of those who fire them. Sometimes the thief covers his entire person with leaves, but he will commit no such foolish act in a country denuded of shrubs and bushes. On naked ground, he is as naked as a snake; in a bushy country, he transforms himself into a living bush: in short, he assimilates his person to the aspect of the country he is traversing.—*All the Year Round.*

Fossil Tree.—Dr. Nichol gives the following particulars of a remarkable fossil plant, the impression of which upon the sandstone has just been discovered:—"Geologists, and especially those taking an interest in the coal flora of our district, may be gratified to learn that an impression of a gigantic fossil plant may be seen, exposed by the blasting of the sandstone, in a quarry between Richmond Villas and Fynone, in the immediate vicinity of Swansea. The portion of the fossil uncovered measures no less than 6 feet 3 inches in width, in the line of its flutings, and 5 feet 6 inches in height at one of its sides, I s structures, so novel and singular, does not seem to be referable to any of the known vegetable types of the carboniferous era, and there is but one form hitherto figured to which it bears any resemblance; but the specimens of this plant, which are likewise rare, measure only about an inch and a half in width.—*Welshman.*

A Giant Stone Tree.—The Maysville (California) *Democrat* gives an account of the most gigantic vegetable petrifaction ever discovered. It was found by Captain J. Stephens in a desolate district near "Hugh Rock Cannon." It is a tree, partly buried in the soil, which measures 600 feet in length and about 60 feet in diameter. There was a complete forest of petrified trees found in the vicinity, evidently the remains of antediluvian ages. The tree lies were it fell centuries ago, the upturned roots are in the position they would naturally be, and the trunk has not been disturbed. Specimens of the tree, chipped off at 200 feet from the base, are exhibited at Maysville.

A Sagacious Dog.—A celebrated surgeon named Livois, who was in the French Army, took compassion on a dog whose leg had been fractured by a shot during the siege of some place or another. He set the bones, and cured him. Some time afterwards he found waiting at his door the same dog, with a companion who

had broken a leg, and whom he evidently wished to introduce to him. The surgeon cured this second dog also, and mentioned the circumstance to the Countess du C., who repeated it to me.—*Miss Knight's Autobiography.*

Wonders in a Spider's Web.—It was recently remarked by the *Builder* that a spider's web furnishes a better plan for the laying out of new cities than any which has yet been devised by surveyors and engineers. Anyone who can find a distinct and complete web unbroken will see how beautifully regular it is, and how perfectly adapted for the quickest passage from any one point to another. The concentric rings are not circles, but polygons, the radiating exquisitely regular and straight.

The Right of Gleaners in France.—Many of the French farmers imagine that it is an act of generosity on their part to allow gleaners to enter their fields after the crops have been cleared off; but the fact is that they cannot do otherwise, as the Court of Cassation has decided that a farmer has no right to turn sheep into his own field till two days after the crops have been carried, so that the gleaners may have time to exercise their rights. Nor can the farmer legally let the gleaning to a third party for a consideration. This same jurisprudence is equally applicable to gleaning in vineyards, and any municipal regulations to the contrary would not be held valid by the tribunals.

Merit and Success.—Extreme popularity in this country and age appears a very arbitrary thing. I defy any person to predict *a priori* what book, or song, or play, or picture is to become the rage, to utterly transcend all competition. I believe, indeed, that there cannot be popularity, for even a short time, without some kind or degree of merit to deserve it; and in any case there is no other standard to which one can appeal, than the deliberate judgement of the mass of educated persons. If you are quite convinced that a thing is bad, which all such think good, why of course you are wrong. If you honestly think Shakspeare a fool, you are aware you must be mistaken. And so if a book, or a picture, or a play or a song, be really good, and if it be brought before the public notice, you may as a general rule predict that it will attain a certain measure of success. But the inexplicable thing, the thing of which I am unable to trace the law, is extreme success. How is it that one thing shoots ahead of everything else of the same class, and without being materially better, or even materially different, leaves everything else out of sight behind. If twenty novels of nearly equal merit are published, it is not impossible that one shall dart ahead of the remaining nineteen, that it shall be found in every library, that Mr. Mudie shall announce that he has 3,250 copies of it, that it shall bethe talk of every circle, its incidents set to music, its plot dramatized; that it shall count readers by thousands, while others count readers by scores; while yet one cannot really see why any of the others might not have taken its place. The will of the sovereign people has decided that so it shall be. And as likings and dislikings in most cases are things strongly felt, but impossible to account for even by the person who feels them, so it is with the enormous admiration, regard and succes which fall to the lot of many to whom popularity *is* success.—*Country Parson.*

Phsiycal Education.—The importance of a larger amount of physical education, and of less time devoted to purely mental training, is well emphasised by Mr. Edwin Chadwick, in papers contributed to the recent Blue Books on Education.

Mr. Chadwick states that the present practice of long hours of teaching is a wide cause of enervation predisposition to disease, and induces also habits of listlessness and dawdling. The half-time system is found to give nearly, if not quite as good education as the whole time; and common sense tells us that a boy who acquired the same amount of knowledge in half the time of another boy, must have obtained a proportionately superior habit of mental activity. It is his alertness, combined with the bodily aptitudes created by drill, that gives the comparatively stunted boys of the town a preference over the strong, robust lads from the coast. Good schoolmasters say that about three hours a day are as long as a bright, voluntary attention on the part of children can be secured, and that in that period may be taught as much as they can receive; all beyond the profitable limit is waste. Hence it is urged that part of the present long school hours be devoted to gymnastic exercises or drill, as part of the system of education, or that the half time system be more adopted. Drill is very strongly recommended by many eminent men, who give their testimony in these papers. It improves the health, the carriage, the manners, even the character; sharpens the attention, gives habits of obedience, promptness, regularity, and self-restraint. "I should consider a youth of double value," says Mr. Whitworth, "who has had training of the nature of a drill; he attends to commands; he keeps everything he has to do with in a high state of cleanliness; defects are corrected, and special qualifications brought out." "We find the drilled men very superior," says Mr. Fairbairn. "They are constantly in readiness for the protection of the country," writes Lieut. Gen. Shaw Kennedy. "Men are frequently required," says Mr. R. Rawlinson, C. E, "to use their strength in concert, for which they must have confidence in one another. I have frequently seen trained men weed out unskilled men where heavy lifting has been required, because they dare not risk the danger arising from unskilled strength."

A Beautiful Picture.—The man who stands upon his own soil—who feels that by the laws of the land in which he lives—by the laws of civilized nations—he is the rightful and exclusive owner of the land which he tills, is by the constitution of our nature under a wholesome influence, not easily imbibed by any other source. He feels, other things being equal, more strongly than another, the character of a man who is the lord of an inanimate world. Of this great and wonderful sphere, which, fashioned by the hand of God, and upheld by his power, is rolling through the heavens, a part is his—his from the centre to the sky. It is the space on which the generation before him moved in its round of duties, and he feels himself connected by a visible link with those who follow him, and to whom he is to transmit a home. Perhaps his farm has come down to him from his fathers. They have gone to their last home; but he can trace their last footsteps over the scenes of his daily labours. The roof which shelters him was reared by those to whom he owes his being. Some interesting domestic tradition is connected with every inclosure. The favourite fruit tree was planted by the father's hand — He sported in boyhood beside the brook which still winds through the meadows. Through the fields lie the path to the village school of earlier days. He still hears from his window the voice of the Sabbath-bell which called his father to the house of God ; near at hand is the spot where his parents laid down to rest, and where, when his time has come, he shall be laid by his children. These are the feelings of the owners of the soil. Words cannot paint them; gold cannot buy them; they flow out of the deepest fountains of the heart; they are the life-springs of a fresh healthy and generous national character.—*Edward Everett.*

How Weeds Multiply.—It has been calculated, at even a low average, that a single plant of the four following kinds will produce as many as 16,400 seeds, and consequently the same number of plants :

1 plant of	Dandelion	produces	2,740
1 "	Sow Thistle	"	11,040
1 "	Groundsel	"	2,080
1 "	Spurge	"	540

—seed enough to stock three acres and a-half with plants at 3 feet apart.—*Scottish Farmer.*

Death to the Bugs.—The following is said to be infallible: Take two pounds of alum, bruise it, and reduce it nearly to a powder ; dissolve it in 3 quarts of boiling water, let it remain in a warm place till the alum is dissolved. The alum water is to be applied hot, by means of a brush to every joint and crevice. Brush the crevice in the floor of the skirting board if they are suspected places; whitewashing the ceiling, putting in plenty of alum, and there will be an end to their dropping from thence.

Flowers.—The body and the spirits are alike improved by the cultivation of the garden. It offers an enjoyment for which no one is too high or too low. More grows in the cottar's plot than flower's; the cultivation of pansies may tend to his heart's ease, the bed of thyme may speed a dull hour, and kind thoughts spring up while watering the clump of forget-me-nots.—Everywhere the heart of man blesses flowers : the child seeks them in the hedges, the old man finds in their culture and study soothing recreation and delight; Pagan and Christian have used them in their rites ; flowers deck the bride, and are strewn on the grave. In every country they smile around us ; to every grade they offer enjoyment ; they give additional beauty to the new palace ; they lovingly shroud the decaying ruin. Babylon had its hanging garden ; Greece its roses and lilies—"Lilia mista Rosis ;" and Rome its boxtrees cut into the figures of animals' ships and letters, to say nothing of its violets and crocuses.

The Best Wine Grapes.—Dr. Mosier, of Cincinnati, the vine grower and wine maker, thus writes to the *Horticulturist*—"Within the last twenty years I have had under cultivation and trial not less than thirty varieties of American grapes, for vineyard culture, and to furnish wine for the million. I think it will be a long time before we find a grape in all respect better adapted to the purpose than the Catawba. When properly cultivated and well ripened it makes a good dry wine, superior to the generality of Rhine wines, and a sparkling wine comparing favourably with the champagne of France. "For making a deep red wine, to take the place of the clarets or Bordeaux, no grape that has been tried hereabouts is equal to the hardy and prolific Norton's Virginia seedling. For choice fancy wines, of a superior grade, I would first place the Delaware, the Herbemont, the Venange, or Minor's Seedling, and the Diana, in the order named. Either of these grapes yield a wine for aroma and delicacy of flavour superior to Catawba, and in my humble judgment equal to any of the best wines Europe can produce ; but as they have not as yet been tested for extensive vineyard culture, will remain some time in the hands of amateurs only."

The Beef Eaten in New York City.—It is printed in a metropolitan exchange that the Annual Cattle Statistics show the capacity of the people of New York city to swallow annually over 150,000,000 pounds of beef alone, at a cost to the butcher of at least $12,000,000.—The number of beef cattle received during 1860 was 226,747 head; the average weight, dressed, was 7 to 7¼ cwt. The average price was $8.15 per cwt., which is at least one cent per pound cheaper than in 1859, and one cent and a half less than in 1858. The total number of live stock slaughtered this year in this city was 1,107,882 head. If they were placed together compactly on a road of 15 feet in width, the mammoth drove would cover 220 miles.

Freaks of the Fungi.—The fungus is a kindly friend—a fearful foe. We like him as a mushroom. We dread him as the dry rot. He may be preying on your roses, or eating through the corks of your claret. He may get into your corn-field. A fungus has eaten up the vine in Madeira, the potato in Ireland. A fungus may creep through your castle, and leave it dust. A fungus may banquet on your fleets, and bury the payment of its feats in lime. Fungi are most at home upon holes of old trees, logs of wood, naked walls, pestilential wastes, and damp carpets, and other such things as men cast out from their own homes. They dwell also in damp wine-cellars, much to the satisfaction of the wine merchant, when they hang about the walls in black, powdery tufts, and much to his dissatisfaction when a particular species, whose exact character is unknown, first attacks the corks of his wine-bottles, destroying their texture, and at length impregnates the wine with such an unpleasant taste and odour as to render it unsaleable; more still to his dissatisfaction when another equally obscure species, after preying upon the corks, sends down branched threads into the precious liquid, and at length reduces it to a mere *caput mortuum.—Athanæum.*

Take care of little things.—The following extract contains the substance of many sermons on the importance of little things. Mr. Irving in his "Life of Washington," says that great and good man was careful of small things, bestowing attention on the minutest affairs of his household as closely as upon the most important concerns of the Republic. The editor of the Merchant's Magazine, in speaking of the fact, says:—"No man ever made a fortune, or rose to greatness in any department, without being careful of small things. As the beach is composed of grains of sand, as the ocean is made of drops of water, so the millionaire's fortune is the aggregation of the profits of single adventurers, often inconsiderable in amount. Every eminent merchant, from Girard and Astor down, has been noted for his attention to details. Few distinguished lawyers have ever practiced in the courts who were not remarkable for a similar characteristic. It was one of the peculiarities of the first Napoleon's mind. The most petty details of his household expenses, the most trivial facts relative to his troops, were, in his opinion, as worthy of his attention as the tactics of a battle, the revising of a code. Demosthenes, the world's unrivalled orator, was as anxious about his gestures or intonations as about the texture of his argument or the grandeur of his words. Before such great examples, and in the very highest walks of intellect, how contemptible the conduct of the small minds who can despise small things."

Cure for Wounded Trees.—Take two parts of cow manure, one part lime rubbish, old plaster preferred, one part of wood ashes, and one part of clay. Let these ingredients be sifted (save the clay,) spread the mortar one quarter of an inch thick over the wounded part, first cutting away the edges of the bark and the dead wood with a sharp knife, afterward sprinkle the whole with a powder of wood ashes and burnt bones.

To Prevent Water Pipes from Bursting—There exists so simple a mode of preventing water-pipes in houses from bursting by frost that we suspect that the plumbers must be aware of it and keep it carefully out of sight. It is to have a small spherical cistern of thin copper attached to the lower part of the water-pipe and a gas burner fixed below it. If when the frost is on the gas be lighted, the effect will be that the cistern will become a boiler on a shall scale, circulating sufficient warmth through the pipes to prevent the action of the frost either in stopping the supply or in bursting the pipes.

Instinct or Reason?—A spotted flycatcher had built its nest in a grape-vine trained to the wall of a house. By some chance the leaves which screened the nest had died or been removed, and the young brood were, in consequence, much distressed by the heat of the sun, increased as it would of necessity be by the reflection. The parent bird was observed fluttering for a very long time together during the hottest part of the day, so as to interpose herself between her fledgings and the sun.—*Atkinson's Sketches in Natural History.*

FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several *pure Durham bull calves* to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the *well known DUCHESS tribe*, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—Frst come, first served.

Waterdown, Nov. 14, 1861. 4–t.

VETERINARY SURGEON.

ANDREW SMITH, LICENTIATE of the Edinburgh Veterinary College, and, by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces, that he has commenced his profession in Toronto, and for the present, may be consulted either personally or by letter, on diseases of Horses, Cattle, &c., at the office of the Board of Agriculture, corner of King and Simcoe Streets; or at Mr. Bond's Livery Stables, ShepherdStreet.

Toronto, Octoner 3, 1861.

FOR SALE.

A FEW PURE-BRED SOUTH-DOWN RAMS and Ewe Lambs, from

IMPORTED STOCK,

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,
Brooklin, Post Office,
Oct. 12th, 1861. Ontario County C. W.

AYRSHIRE BULL FOR SALE.

MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,
Dover Court.

Toronto, Aug, 1861.

THE

JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES,

FOR UPPER CANADA,

Is Published on the first of every Month,

AT $1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

FOR SALE.

A LOT of thorough bred ESSEX PIGS,—bred from recently imported 1st prize animals, and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

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The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

Subscription—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD F AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, DECEMBER 1, 1861. No. 23.

The Great International Exhibition, at London, 1862.

We trust that a sufficient number of our Agriculturists and Mechanics are making preparations to represent the industry of this Province at the approaching great Exhibition in England, next year. From a circular of the commissioner, which appeared in our last issue, it would be seen that applications from parties desirous of exhibiting, would be received till 4th December at Montreal, and that certain points would thereafter be designated in each section of the Province at which articles prepared for exhibition would be received, up to certain dates. In a subsequent advertisement of the commissioners, which appears in onother part of this number of our journal, and to which we beg leave to direct the attention of our readers, these points are indicated. They are, for Upper Canada, as follows: London, 18th February; Hamilton, 20th Feb.; Toronto, 22nd Feb.; Kingston, 25th Feb.; and Ottawa, 28th February. Articles may be sent in for examination and approval at any time between the 10th of February next and the above mentioned dates, whether application to exhibit the same has been previously made or not. Parties desirous of further information in regard to agricultural products may apply to Col. Thomson, President of the Board of Agriculture, Toronto. For fuller particulars in regard to the conveyance to places of examination, &c., we beg to refer to the advertisement of the Commissioners. We trust that Canada, which gained so high a place for herself at the Exhibitions of 1851 any 1855, at London and Paris, will not exhibit any falling off in 1862, but rather a proportionate advance upon her former position. Industrial products of every description, except live stock and vegetable products of a rapidly decaying nature, will be received. We understand that already a considerable number of applications have been sent in, but as yet only a small proportion of what may be expected. The Agricultural and Natural products selected will, we understand be purchased by the Commissioners, and the freight on all the articles forwarded to London will be paid by them. The very best specimens of agricultural products which it is possible to procure ought to be obtained for the Exhibition, and those who are able to supply such specimen sought to be forward in placing them at the disposal of the Commissioners for the purpose.

The Wentworth and City of Hamilton agricultural societies, it will be seen by an advertisement which appears in another column, propose holding a special exhibition in January, for the purpose of selecting articles to send to London. We commend their example to the consideration of agricultural societies elsewhere.

Substitutes for Guano.

It is well known that the British farmer for the last quarter of a century has been largely dependent on Guano in sustaining or increasing the fertility of the soil, and consequently the augmented crops which characterise modern husbandry. This article, as yet, has been but partially employed by Canadian farmers ;—where however, it has been tried,—more particularly in the raising of root crops, the results, we believe, have been generally satisfactory. The present high prices of good varieties of guano will operate as a check to its employment in this country as a manure for general purposes, and barn-yard dung and gypsum must continue to constitute the principal materials for dressing the land. The following facts condensed from a prize report of Mr. John Dove, in a recent number of the Highland Society's Transactions, will be found instructing and suggestive to our readers.

Mr. Dove comes to the conclusion from extended and carefully conducted experiments, instituted for a special purpose, that the supply of guano is not absolutely necessary in Britain for keeping up the fertility of the soil, as there are other substances at command by which it can be equally well done, and that it becomes a mere question of relative cost.—*On turnips,*—a crop to which by far the largest quantity of artificial manure is appled, superphosphate and sulphate of ammonia are quite aqual to most kinds of guano ;—on *wheat*, sulphate of ammonia has been found superior to it; on *oats*, there is not much difference between guano and nitrate of soda; and on *grass*, nitrate of soda is better. Mr Dove is of opinion that if it were possible to get a larger importation of the nitrate of soda, at a cheaper rate, it would be one of the greatest boons that could be rendered to British agriculture. The supply of it is said to be unlimited, and the cost to consist chiefly in the labor of preparing and transporting it to the sea coast in those countries where nature produces it. If the means of cheapening its preparation and transit could be effected, its expense would be greatly lessened, a reduction in the price of guano must soon follow, or the demand for it would quickly fall off. A few years since we employed the nitrate of soda on a small scale for experimental purposes, and in most instances with marked benefit to the crop. Grain that looked yellow and sickly in the beginning of June was in a marvellously short time changed to a swarthy green, and its growth pushed forward vigorously ; which was also the case with grass. On flowers and garden vegetables its effects were in many cases in a very short time, most striking; and the crop materially augmented. As a farm fertilizes, however, the nitrates of potash and soda, from their high price, cannot, we think, be profitably employed in Canada. Mr. Dove is of opinion that these and other materials, such as rape, woollen rags, superphosphates, &c., will for the future keep down the demand for guano in Britain, where its price has of late years considerably increased.

Agricultural and Veterinary Instruction.

It is probably known to most of our readers that a gentleman from the Edinburgh Veterinary School, has recently come to Canada at the instigation, and under the patronage of the Board of Agriculture. One of the principal objects contemplated is the ultimate formation of a Veterinary School for this Province. An object of such importance can only be realised by the careful adoption of preparatory and pro gressive measures, and as an initiative, it is proposed to devote four or five weeks this winter to the giving of popular instruction to all such young men in the country who may be disposed to avail themselves of it, in scientific and practical Agriculture, including the breeding and management of farm animals ;—their anatomy, physiology, diseases, &c. This course will probably commence the beginning of February. Professor Buckland, assisted by the Professors of Chemistry, Geology and Natural History, in University College, will conduct the Agricultural, and Mr. Andrew Smith, the Veterinary department of the course. The main object aimed at will be impart as much useful information to young men of ordinary powers of comprehension, engaged in farming pursuits, as the limited time will allow, and to put them into a way of subsequently prosecuting these studies by themselves. As the only expense incidental to the proposed course of instruction will be a few text-books,

and board and lodging, it is expected that a number of our young farmers desirous of improvement will readily avail themselves of it. We shall give full particulars in our next issue.

For the Agriculturist.

Death of Mr. Dods, of Petite Cote.

This sad and unexpected event has spread a gloom of sorrow over the whole of Lower Canada. Remarkable for his unassuming and retiring habits and manner of life, Mr. Dods, nevertheless, was known, and his character respected, over the whole of the Lower Province, while his many amiable qualities had endeared him to a large circle of friends. A liberal patron of every benevolent scheme, he was in an especial manner the friend of the poor and needy in his own immediate neighbourhood. As a spirited and successful agriculturist, his death is to be regarded as little short of a national calamity.

For nearly thirty years he had resided on his farm at Petite Cote, near Montreal, and his career as a farmer was one of untiring diligence and steady improvement in his profession.—Bringing with him from Scotland, his native country, a large amount of experience, he engrafted into his system of farming all the improvements of the old country that were suitable to the altered circumstances of the new world; wisely adopting such of the prevailing customs of his adopted country, as he saw to be beneficial. As a result, his farm, at the time of his death, was in every respect a model one, while his perseverance amid the many difficulties incident to a new country, and the prejudices which oftimes obstructed his efforts to influence others, call for our admiration, as they are worthy of the imitation of the farmers of the whole Province.

Mr. Dods was an enthusiast in his profession, and excelled in every department of it. Of the various breeds of sheep, horses, and cattle, he had imported from Great Britain perhaps more than any other single individual in Canada; this his ample means enabled him to do to the best advantage. That he was singularly fortunate in his selections is best attested by the numerous prizes which he received whenever he exhibited his stock in competition with others.

Nearly the whole of his large farm had been thoroughly tile drained, and it is satisfactory, as well as highly important that the farmers of Canada should know, that in his experience, this operation was found to be remunerative. His system of cultivation was neat, husband-like and thorough, based upon enlarged and scientific principles—at the same time eminently practical, widely different from the lavish—often useless and inconsiderate expenditure which too frequently marks the practice of those whose money constitutes their only title to the rank of "the Gentleman Farmer."

Mr. Dods has thus done much to elevate the standard of Agriculture in Canada. His life has been a bright example of a man, "not slothful in business—fervent in spirit, serving the Lord;" one who, looked up to by his brother-farmers, commanded also the respect of others whose educationand intellectualendowments,had placed them at the head of refined society. His business talents were of no mean order. For many years he held the office of director of the City Bank. He was also for many years President of the County of Montreal Agricultural Society; by his prudence and liberal views he was the instrument of elevating that society to its present state of usefulness and efficiency—a matter of no small difficulty when the contending influences brought to bear by the antagonistic pressure of French and English interests, are taken into account. His sauvity of manner, coupled with decision of character, did much to reconcile discordant feelings, and when he retired from the presidency of the Society he did so with the satisfaction of witnessing both races united in a generons rivalry.

A painful and melancholy interest attaches to the circumstances of his death. While walking in his own field, superintending the operations of his farm, he was attacked by a vicious bull of his own herd—a very fine specimen of the Ayrshire breed. Ere assistance reached him, he was fearfully gored and bruised in various parts of his body. Medical aid was promptly obtained, and it had been hoped that his injuries might not prove fatal; but it was otherwise ordained,—at the end of ten days, unfavourable symptoms made their appearance, resulting in what is known by the medical profession as

"Piaemia." Under this disease he sank rapidly, and expired on the 18th November in the 54th year of his age. His last moments were free from suffering. Living, he was a humble, devout Christian. His death was that of the righteous. "His last end like his."

Archerfield, 25th November, 1861.

The Wheat Crop.

(*Continued from page* 684.)

After the *soil*, the *seed* is the next point which claims attention. Here the conditions of success are simpler, and far better understood. In all cases care should be taken that the seed be perfect (unmjured), and fully matured; and that it be of the best quality. If the seed be much bruised or injured, its germinative powers may be entirely destroyed, and it decays in the soil without producing a plant at all. If it be slightly injured or not fully matured, it generally produces a weak and sickly plant, which fails for want of nourishment, before it is able to throw out roots and obtain its own supply; or, if it has strength sufficient to struggle through this period of its existence, its generally debilitated condition renders it liable to the attacks of those fungoid and insect enemies which accompany every stage of its future growth.

Lastly, the mode of *sowing* requires consideration—whether by "broadcast," "drilling," or "dibbling" the best results are to be obtained. By the first, time and labour are economised, at the expense of an increased quantity of seed; by the second, the quantity of seed is economised, but the cost of labour is increased; and by the last, the proportion of seed is still farther lessened, while the cost of labour is still augmented. The first mode renders any subsequent operation, as hoeing, weeding, &c., impracticable; while the two latter modes give every facility to them, and, at the same time, more equally and regularly distribute the plants over the surface.

The regularity of distribution over the surface is of some importance to the future yield. An equal, regular plant is usually more productive, both in quantity and quality, than where the plant is patchy—luxuriant in some places and defective in others. The ordinary practice of seeding is far too close; a greater distance between the plants would—provide, of course, that the seed were good and the soil in proper condition—give much better results, not only as regards the crop—the primary crop—whatever it may be, but also as regards the secondary crop—seeds, for instance, that might be sown with it. The usual width of drills may be taken at 6 to 9 inches; if this be increased to 12 inches the effect on the grain crop, but more particularly on the seeds, is very marked.

The Lois-Weedon system resembles much that advocated by Jethro Tell about a century ago—deep cultivation and wide drilling—by which, without any manures whatever, a large crop of wheat could be obtained, it was said, year after year, off the same ground. Here however, a difference of material importance exists between the two systems. Tull operated on the same ground, while by the Lois-Weedon system it is not precisely the same ground that is cropped in each succeeding year; indeed it is merely a system of alternate fallowing and cropping, the repeated fallowing being equivalent (during a certain time (to the manuring of the Essex and other heavy land fallowing practices.

In this, the wheat is drilled in 12-inch rows, and between every set of three drills there is an interval of three feet, which is dug or forked, and kept well stirred and pulverized during the whole time the crop is growing and coming to maturity. In fact, it is simply a naked fallow, extending over a portion of the field equal in extent to that occupied by the crop. When the crop is harvested, the empty spaces are quite ready, in thoroughly clean and mellowed state, for the reception of the seed; this space is then sown in the same manner, and the next year's crop is produced solely upon that portion of the field which was under a naked fallow the past year. It appears to be, therefore, clearly a system of alternate crop and fallow; and by this arrangement of wide drilling and open intervals of space, with *deep tillage* and perfect *freedom from weeds*, the crop oneach half acre so cultivated is found to exceed in quantity the average of that grown under the ordinary mode of cultivation upon the whole acre surface, while the sample is always more regular and of better quality.

The returns of wheat produce from one particular piece of land upon which the practice has been continuously tried since its commencement in 1847 are thus given by the Rev. S. Smith:

1847	not measured.	1853 } 1854 }	returns good, but not noted
1848	34 bushels.		
1849	34 "	1855	40 bushels.
1850	34 "	1856	37 "
1851	28 "	1857	36 "
1852	34 "	1858	40 "

These returns must be understood to be from each *half acre* under crop—the other half acre, thanks to the working it has during its fallow, being in an admirable condition for the next year's crop. The tillage processes during the fallow, Mr Smith tells us, amount to 12s. to 18s. per acre. The cost would be diminished to one-half or one third, now that we have sucessfully harnessed steam to our plows and cultivators. The increased vigour of plants, owing to the deep tillage and open growth, shows itself in the stoutness of the straw, which frequently exceeds 2 tons to the half-acre, and is very rarely laid. A practice of earthing up the plants with a light mouldboard, which Mr. S.'s system of

wide cultivation has enabled him to apply to his wheat, no doubt assists in maintaining the stoutness and strength of the plant, as we know it does in Indian corn and other plants of the same family.

Let us now follow the growth of the plant, whose existence we have traced from the parent seed up to the period when, having passed through the earliest stages of its life, and consumed all the food stored up for its use, it enters upon an independent career, and relies upon its own powers for its future support. During the growth of the plant many circumstances have influence over it: the principal of these are in connection with the soil in which it is placed, or the atmosphere which surrounds it. Favorable conditions are readily recognized in the more or less vigorous appearance of the plant; in some cases, however—for instance, where the soil contains a large proportion of available organic matter—the plant starts off with an appearance of growth which it is not able to sustain in its after stages. In others, again, owing probably to a deficiency of soluble silicates in the soil, the straw, though stout and tall, is of too herbaceous a nature, and lacks the rigidity necessary to carry a full head to maturity; and again the produce is unsatisfactory. In both these cases the application of common salt as a top-dressing at the rate of 3 to 5 cwt. per acre, is generally found to be followed by good results.

Again, appearances just opposite to these are to be frequently seen in crops growing even on strong and good wheat soils, especially if the season be a dry one, where a deficiency of organic food for the plant occasions a stunted, though at the same time not an unhealthy growth. This may entirely disappear should the weather change, and furnish a supply of moisture to the soil, which would enable the roots to obtain more readily the needed supplies; or it may be materially improved by the judicious application of some manurial substances, rich in the elements which the plant is supposed to require. Here the good effects of nitrogenized manures are generally seen, guano (Peruvian) and nitrate of soda being those usually applied, at the rate of 2 to 3 cwt. per acre. In all cases, these top-dressings should be applied immediately before or during wet weather, so that they may be acted upon by the rain, and carried at once into the soil.

Frequently, after a mild winter especially, the autumn-sown wheats on good soils present an appearance of luxuriant growth, which is considered to augur badly for the future crop, as rendering the plant more liable to disease, and to suffer from the weather. In this case a practice exists of feeding it off by sheep, and then allowing it to resume its growth. This practice does not appear to make its way as it ought to do; chiefly, I am inclined to think, because where it has been tried unsatisfactorily, the necessary conditions and precautions were not properly observed. It should not be attemped too late in the season, certainly not later than the end of March; the land should be sufficiently dry to carry the sheep, of which a large number should be folded on it at once, so as to get over the surface rapidly. The wheat should be eaten down close to the crown of the root, and not merely its leaves only; and then when the sheep are taken off and vegetation is again unchecked, stems are sent up from each knot of roots formed by the "tillering" process of the plant, and being now of equal growth, present at the time of harvest an equal plant all over the field, with none or few of those short straws with small heads, (tillers), which not only ripen irregularly, but lessen the produce returns of wheat grown under the ordinary conditions.

There can be no doubt that, *cæteris paribus*, autumn-sown wheat is more productive than spring-sown, it being the growth of say ten months (October to August), against six months (February to August). The roots have an opportunity of developing themselves, and penetrating deeper into the soil, by which they are placed in far more favorable conditions as regards mineral food, moisture, and temperature than when they are forced to remain nearer the surface. To compensate for these advantageous natural conditions, spring-sown wheat requires a soil richer in available food, so that it may feed quicker; that it may, indeed, be able, in six months, from a limited depth of soil, to abstract as much food as the autumn-sown obtained from an increased depth of soil in ten months. If this is not provided by the farmer in the superior condition of his land, his returns will not be so productive from his spring as from his autumn wheats, while he must always bear in mind that the former are more liable to be influenced by climatal effects—rain or drought—than the latter.

The vast increase of turnip cultivation during the last twenty years has greatly affected the period of wheat sowing throughout the country. The practice of spring sowing has followed the introduction of turnips, into districts where formerly it was never thought of. In instances where wheat follows turnips fed off on the land a plentiful supply of available food is prepared for the wheat by the preceding crop, while the extra tillage of the turnip crop acts as a good preparation for the wheat.

During the period of growth the wheat requires but little attention. Early in the spring some mechanical assistance should be given to the soil, in the shape of rolling or harrowing, in order to compensate for the effects of winter and restore the surface to its proper condition. On certain soils—those containing much clay or lime for instance—the alternate frosts and thaws of winter frequently leave the surface in a very a loose and open condition, in many cases, indeed, exposing the roots prejudicially, and in some lifting the plants completely from their bed.

Here the roller does good service to the land in consolidating the surface soil, which it leaves at at the same time in a finely divided condition. On soils of a loamy character the heavy rains of winter frequently, if succeeded by drying winds, leave the surface battered down and coated with hard dry crust impervious to the atmosphere, and obstructive to the increasing vitality of the plant at that period of the year. This may be readily broken up, and a healthy surface restored, by a double turn with the light seed harrows. Later in the spring the operation of hoeing should not be neglected, as even on the cleanest farms a certain number of weeds will always be found, and they must abstract from the soil matters that would otherwise be available as food for the growing crop. The introduction of the expanding horse-hoe has been a great benefit to the farmer, as it enables him to hoe his wheat land more efficiently, more quickly, and at a saving of three-fourths to four fifths, as compared with hand labor. Hand-hoeing is generally piece work. Here the interest of the employer and the employed are opposed to each other, and one generally suffers. The object of the farmer is *quality*, the object of the labourer is *quantity* of work, and if the latter is not well looked after, or above the average honest, the one is sacrificed to the other, and the soil removed by a 6-inch cut with the hoe serves to cover up the next 6 inches of untouched surface; while the agreed price of say 3s. per acre actually becomes 4s., 5s., or 6s. per acre, according to the proportion left unhoed.

Time, too, is an important element in this operation. Hoeing must not be attempted, unless the ground be in a suitable condition, or it would occasion more harm than good ; and this particular condition rarely exists for more than a few days at a time, at the season when hoeing should be done, a shower, if only of an hour's duration, frequently putting stop to a chance of hoeing for the remainder of the season. Where there is a large breadth of wheat grown, the labor question of hoeing becomes a serious one, as a man cannot fairly and properly get over more than half an acre per day, especially where the drills are of the ordinary width. The horse-hoe relieves the farmer from much of his anxiety. He has only to regulate the depth and the withth of the cut, and be assured that the whole of his surface will be equally acted upon by it. He finds that, with one man to direct and a horse to draw, the implement will do on the average from eight to twelve acres per day (according to the description of soil and width of drills) in a superior manner, at a cost of say—horse, 2s. 6d.; man 2s. 6d.; wear and tear, 1s. = 6s.; which would have required the employment of sixteen to twenty-four labourers to effect, and at an expenditure of from 24s. to 36s. This, like many other machines possessing equal advantages, can only *follow* good farming. Before it can be rendered available, the land must be drained and laid flat, the surface must be well tilled, and the seed must be deposited in parallel lines; then there is no difficulty whatever in successfully working it.

After the hoeing has been successfully accomplished, the wheat must be left to take its chance against the various injuries and enemies which attend upon every period of its growth. These we will discuss after we have harvested our crop, as, although the injuries they inflict are principally during its growth, our knowledge in referenceto them is unfortunately far too imperfect to enable us to assign, except to a very few, the exact period of their attack, the part of the plant in which it is commenced, or the mode in which it is effected.—*Our Farm Crops, by* Professor Wilson.

Advantages of Agriculture to be expected from the Great Exhibition, 1862.

Extract from the remarks of Mr. Brandeth Gibbs, before the Bedfordshire Association :—

"Continuing then, this glance at the future, I may remind you that next year our society is about to hold its great Metropolitan meeting under the presidency of His Royal Highness the Prince Consort, and this too during the period of the Great International Exhibition of 1862. A metropolitan meeting is an event not likely to take place above once in a quarter of a century, and we may therefore, fairly expect that thousands will throng our show-yard, not only from all parts of the United Kingdom, but also from foreign countries. It may be asked, 'of what advantage will the attendance of foreigners be to us? Will they not gain more from us than we from them? Cannot our agriculture vie with that of any other country in the world? Are not our implements far superior to any others, and cannot our live stock defy competition, come whence it may?' In reply to this I would ask what then is the benefit of an agricultural show, and what has been the result of the Great Exhibition of 1851? Of the benefit of any agricultural show, I would say that I believe that no man of ordinary observation can attend your interesting show this day without gaining some information. Those who are engaged in the same pursuits meet together, ideas and experiences are interchanged, failures or successes in experiments are explained, useful inventions are stamped with approval, and prejudices are removed, and information communicated from one to another. If, then, this holds good of a local meeting, if concentrating the agricultural experience and knowledge of any county or district is of mutual advantage to those residing in it, how much more forcibly does this apply to the meetings of our National Society, which bring together those who would scarcely ever, otherwise, have the opportunity of meeting! I need then go but one step further. I have gone

from a county to the whole of England, and I will now apply the same reasoning from England to the world. Gentlemen, the foreigner is placed in different circumstances to ourselves; he has different ideas, different requirements and necessities. 'Necessity is the mother of invention;' and foreigners are, perhaps, more of an inventive turn than ourselves. The result may prove that what owes its existence to these causes may eventually be so modified and adapted as to meet some want of our own. Indeed, I may point to the reaping machine as illustrating this. It is true that long before the year 1851, reaping machines had been invented, but their existence was little known. *It was not until America exhibited those of M'Cormick and Hussey in the Great Exhibition of* 1851, *that the attention of our English manufacturers was seriously turned to this description of implement*, and thus a machine called into existence to meet a foreign want has been adapted and improved so as to meet what I believe to be a want of our own. But I need not weary you with further illustrations; I believe I have said enough to show that the Great National Exhibition of 1862 may be frought with important results to agriculture, and I believe that I have at the same time shown that our society has entered upon an important era in its existence."

Mines of Wealth hidden under the Chalk Stratum.

Sir Roderick Murchison has started a subject at the Wayland Agricultural Meeting, which we fancy will occupy the attention of the agriculturist.

Lord Walsingham, who occupied the chair, in proposing Sir Roderick's health, said: perhaps it would be too much to expect from a gentleman who had anticipated the finding of gold in Australia, that he should teach them how to find gold in the sands of Norfolk: but he would venture to say that the due and prudent application of science to the practice of agriculture was not a less sure way of finding gold than digging for it where it had long lain hidden in the bowels of the earth. If Sir Roderick were kind enough to make them an address on this occasion, as he had no doubt he would, he might, perhaps, be willing to tell them how important it was to farmers that they should consult something of the geology and mineralogy of the stratum on which they lived, and ascertain how much the surface was altered by the character of the geological stratum beneath it. Sir Roderick might perhaps be willing to tell him why it was that among the sands of Norfolk they found those deposits of clay and marl which they used so largely in fertilizing the soil. But without anticipating what Sir Roderick might be disposed to say, he would only further add that if he spoke of that which he knew he must speak to them of things of which they knew little or nothing, and it was quite impossible that Sir Roderick could address them without giving them much important and valuable information.

Sir Roderick at once took up the gauntlet, and thus replied:—With regard to the discovery of what might exist under the soil, to which his noble friend the President had adverted, the time was when Dr. Buckland, his (Sir Roderick's) distinguished and illustrious predecessor, had said the day would come, and so he told the late Sir Robert Peel, when there would be found under the soil phosphatic substances that would greatly enrich the farmer. Dr. Buckland was actually laughed at and actually scorned for having expressed such an opinion, but they had lived to see the day when, in the adjoining county of Cambridge, the substratum was laid open to the day, and the lands of that and the adjacent counties were enriched to a large extent by the exhumation of those very phosphatic substances that formerly were deemed as nothing to the farmer, and only regarded by geologists as curiosities. They now knew the value of this discovery, and he only wished he could further point at what depth underneath the Norfolk chalk this sub-stratum might be found. Let them hope that when the geological survey came here, they would find some corner in Norfolk where the chalk thinned away, and where this stratum that lay immediately under it, cropped out in great abundance. They would then see some spirited nobleman, like Lord Walsingham, sinking a shaft to bring it out and enrich the land with a material that was equal to any guano the farmers now paid so high a price for. These were the chief advantages which the geologists, the underground men, could communicate to the farmer. The whole system of drainage depended on a knowledge of the subsoil. How should geologists know anything of their trade if they could not say where a well should or should not be sunk? How should they know anything of the strata, or be considered as anything in their profession, if they were not able to tell the farmer how to drain his lands? These were the points on which geologists were connected with agriculture, and he must say that they would never have arrived at half the knowledge they possessed, by going over the surface of the soil and into the ravines that here and there existed, were it not for the kindness and hospitality by which they had been received by the British farmers. To them the geologists owed a deep debt of gratitude wherever they went, and all the surveyors under his direction—for he was at the present moment director of the geological survey of the British Isles—were under the deepest obligations to British proprietors and farmers, not only for the kind manner in which they were received, but also for the way in which they were instructed, in the nature of the soil they examined. He could not exactly answer the question that had been propounded by

his noble friend, for he assured them it was a most difficult one. Lord Walsingham had asked him how he could account for the intermixture of clay, sand, and flints, that was found here and there in the different pits that were sunk. Geologists merged all these materials in the common name of drift. They were drifted materials that had been carried from different rocks over the surface of the land. The sub-soil was chalk, but some of the soil which covered it was, he was happy to say, sufficiently thick to bear the magnificent oaks he had seen on the estate of his noble friend; while, from what he had seen during the little partridge shooting he had enjoyed with his friend the Duke of Wellington he found it thin enough for the chalk to be seen at the surface. How to account for every heap of sand or gravel would defy the best geologist that ever lived; and his lordship had, therefore, propounded to him a question which no geologist at this moment was in a position to answer.

American Cavalry Horses—their Inferiority of Quality and its Causes.

Some of the remarks in the subjoined article, which we copy from *Wilke's Spirit of the Times*, are deserving of the special attention of breeders of horses.

A long continuance of profound peace and tranquility has invariably been found to lead naturally to a feeling of national security, and a relaxation of that vigilance which is asserted to be the price of liberty. This cause, combined with that eager and engrossing pursuit of the "almighty dollar," which is generally regarded as characteristic of the American people, has caused us to neglect the judicious maxim, "In time of peace, prepare for war." This is especially true of one of the most important arms of our military organization—our cavalry—and the seemingly studied negect with which we have treated it, would lead to the conclusion that we ignored its value. The breed of horses best adapted for cavalry may be said to hardly exist in this country, or, at all events, only in a very limited degree. This is especially evident in viewing a regiment of cavalry at the present time, and observing the heterogeneous lot of horses on which they are mounted. Horses of every breed, except the one best suited for the cavalry charger, are there in abundance. The trotter, with his unnatural gait and unsuitable action, is alongside the badly-broken and hard-mouthed hack, and the lumbering Conestoga; all equally unfitted for active service in the field. But the true charger, nearly thoroughbred, full of fire and courage, that can clear a hedge or a ditch like a deer, carry his heavily armed rider with ease, and possess both speed and endurance in the highest degree, is hardly ever to be seen. And to what is this deterioration of our breeding stock to be attributed? It is to the fact that in the Northern States, racing, as a national pastime, has been allowed to die out, and, as the natural consequence, we are fast losing in the breed of our horses, the speed, courage and endurance which are characteristics of the thoroughbred racer. Trotting has usurped the place of racing in the affections of the people, and the country has become flooded with a breed of horses that are utterly valueless for cavalry purposes in time of war, however useful they may be for the pursuits of peace. Such a class of horses can never be got to face the cannon's roar, or to charge the serried ranks of glistening bayonets. "Blood will tell," and they would recoil and run away in such circumstances, where the stock of the "high mettled racer" would stand firm, and, like its rider, defy the whistling storm of death.

In the Southern States, where racing, as an institution, flourishes and prospers, they possess a breed of cavalry horses which can hardly be excelled in the world. In the commencement of the present war, they far surpassed us in the number and excellence of their cavalry, and even now they are far better mounted. In the Mexican war it is well known that the cavalry furnished by the Southern States was much superior to the Northern, owing to the better breed of their horses, which could withstand any amount of fatigue and travel. In actual warfare, the great advantage of cavalry is by charging, to prevent the reforming of the enemy's ranks, after they have been broken by the fire of artillery, or by the bayonet charge of infantry; and by completing the temporary disorder, produce a disastrous effect throughout the ranks. To effect this; the horse and the rider must be so trained that every evolution can be executed with precision and rapidity; and it is essential that the former must possess courage, endurance and speed. The latter quality is as important a requisite as the other two, so that no time may be lost in making the decisive charge upon the already broken ranks. It is easy to conceive the effect upon raw recruits of a charge of well organized and well mounted cavalry, when the lines are once broken: the trampling down of the horses and the fearful execution of the riders' sabres; the temporary disorder may often precede a total rout.

In England, where racing is a national institution, patronized and supported by annual grants of money, by government itself, are to be found the best cavalry horses in the world. For this purpose the English hunter stands unequalled: he is nearly thoroughbred, and possesses all the virtues of the latter, with an increase of stoutness. Russia, whose Emperor, Nicholas I, devoted such care and attention to raising a breed of cavalry horses, imports all her thoroughbred stallions from England. No price is too great for a first-class thoroughbred sire, as the heavy

sums that the late Emperor paid in England for such, testify. He gave $10,000 for Van Tromp, after he had broken down in training; Andover became his property for the same figure. For Peep-o'-day-Boy, Col. Shrider, the Emperor's agent, was asked $3,000, but as he would not give an answer at the time, the price, on his next visit, was raised to $6000; another demur shot the price up to $8,000, and the Emperor bought him for that sum. Dr. Cains, Cardinal Wolsey, Soothsayer, Juggler, Bourbon, Middleton, Memnon, Allegro, Coronation, Jereed, Ithuriel, Uriel, General Chassee, Wanota and Andover, are a few only of the "terribly highbred" English stallions that Russia has imported to produce her cavalry horses. In the south parts of that vast empire, the studs for cavalry horses alone comprise 1,000 to 1,500 mares each.—Strict military discipline is kept up, and the great object is to get horses as thoroughbred as possible, as the half breeds cannot stand six or seven hours of manœuvring on parade. In the royal stables alone, in Nicholas' day, there were 600 chargers and 600 in breaking, 1,200 harness horses and 1,200 in breaking, and these did not include those at Warsaw and Moscow.

In France, the breed of cavalry horses is equally as great an object of importance and care as in Russia, and the thoroughbred racers of England are the source from whence stock is derived. Some of the best horses that ever ran on the English turf have been purchased for the Government Haras. Gladiator, Lanercost, Ionian, Sting, The Baron, Ion, the Emperor, Nunnykirk, Dithiron, Womersley, Hernandez, Caravan, Assault, Flying Dutchman and West Australian, have sown their high-bred progeny largely over France. For cavalry horses, the government has several *depots de remount*, but it will only buy from breeders, and not from dealers. In spite of this virtual monopoly, their great cavalry contract in 1842–3 was executed in England. Their standard for the cavalry *legere* is from fourteen-three to fifteen hands; for the dragoons, from fifteen-one to fifteen-two; and for the cuirassiers, from fifteen-two to sixteen hands. The Emperor's own private establishment contains nearly five hundred horses.

Prussia, Sardinia and Austria, also pay great attention to the raising of cavalry horses, and, like Russia and France, endeavour to have them as near thoroughbred as possibte. Prussia imports a vast number of thoroughbred mares for the Government Haras, in which are now standing the famous sires, Stilton, Ephesus and Chatham. The studious care devoted by the governments of Europe to the securing and cultivating of the best breed of horses for cavalry purposes, stands in striking contrast to the neglect hitherto evinced by our own government in this important matter. Nor has individual enterprise effected what government has left undone. Throughout the Nortern States, breeders devote all their efforts to the extension of a race of trotters, which can never be made good cavalry horses, and think more of a Morgan, Bashaw, or Messenger than of the best thoroughbred racer on the turf. Except Lapidist, Comet, Hermes, Mango, Slasher and Consternation, we have no thoroughbreds at the stud; while in the South they are spread broadcast through the States, and include such world-renowned horses as Albion, Childe Harold, Yorkshire, Lexington, Nicholas, Revenue, Sovereign, Fly-by-night, Wagner, Balrownie, Knight of St. George and Bonnie Scotland.—We repeat, therefore, that it is to the dying out among us in the North, of racing as a national pastime, that the degeneration and deterioration of our breed of horses for cavalry is to be attributed, and to its revival only can we look for a remedy for the evil.—*Wilke's Spirit.*

The Harvest Moon.—The remarkable phenomenon of the harvest moon is familiar to every one. During the time that our satellite is full, and for a few days before and after—in all about a week—there is less difference between the time of her rising on any two successive nights than when she is full in any other month of the year. By this means, an immediate supply of light is obtained after sunset, so beneficial for gathering in the fruits of the season. To conceive of this phenomenon, it must be recollected that the moon is always opposite to the sun when she is full—that she is full in the signs of Pisces and Aries, these being the signs opposite to Virgo and Libra, which the sun passes through in September and October, our harvest months. Thus, although, whenever the moon enters the signs Pisces and Aries (and she does so twelve times a year), the same circumstance takes place with regard to her rising, yet it is not observed on these occasions, just because she is not full at the time. The reason of there being little difference in the time at which she rises on several consecutive nights is that at these periods her orbit is nearly parallel with the horizon. The harvest moons are as regular in south latitude as with us in north latitude, only they happen at different periods of the year. —*Chamber's "Information for the people."*

An Easy Way to Dissolve Bones.—James S. Grennell, Esq., Dreenfield, practices dissolving bones by a method which seems worthy of notice from its simplicity and convenience. Casks having each but one head are provided; a layer of bones six or seven inches thick placed on the bottom; then strong, unleached wood ashes are spread over the bones to the thickness of two inches or more. The casks are filled in this way, taking care to have a pretty good thickness of ashes at the top to prevent the exhalation of ammonia. The process of thus packing the bones goes on through the season,

as ashes accumulate in the house, and they remain in the casks till spring, when the casks are emptied, and the bones are found to be generally well pulverized, or so soft that they can easily be broken as fine as desired. The mixed bones and ashes are excellent manure for most crops, and especially for fruit crops.—[*Boston Cultivator.*

Relative Value of Substances for Producing Milk.—Several French and German chemists estimate the relative value of several kinds of food for milch cows according to the following table:

That 100 pounds of good hay are worth
200 pounds potatoes.
460 " beetroot with the leaves.
350 " Siberian Cabbage.
250 " Beetroot without the the leaves.
250 " Cartots.
80 " Hay, clover, Spanish trefoil or vetches
60 " Oil Cake, or colza.
250 " Pea straw and vetches.
300 " Barley or oat straw.
400 " Rye or wheat straw.
25 " Peas, beans, or vetch seed.
50 " Oats.

Burning Clay Soil.—Stiff olay soils are sometimes greatly improved by burning a portion of the surface. The burned clay loses its tenacity, and being mixed with that which is unburned, a more friable soil is produced — The burning of clay, however, deprives it of the power to retain fertilizing salts, which it naturally possesses in a high degree. This subject was alluded to in a late lecture by Mr. Holland before the Evesham Farmer's Club. He said :—'Professor Way had two large boxes made, one of which was filled with burnt, and the other with unburnt clay. In these a strong solution of salt and water was poured, holes being left in the lower part of the boxes for the solution, after percolating through the clay, to escape by. It was found that that which ran through the unburnt clay came out almost tasteless, whilst the burnt clay allowed the solution to come away almost as strongly impregnated with salt as when it was first poured into it. The advantage of burning clay was, that in doing so a very large portion of the ground was laid open to the action of the atmosphere, which was of great service, for a large amount of nitric acid and ammonia came down from the sky and strengthened the soil, if the earth was only open to receive it. That was one of the advantages of deep tillage and of burning the soil upon very heavy land."—*Ex.*

Late Pasturing.

Some farmers keep their cattle out as late as possible in the fall, and even into winter. The pastures are gnawed very close, and even the after-math of mowing fields, as if they never expected to get another crop of grass from them. This is very bad husbandry upon any land, and especially upon that recently seeded with herds-grass. This grass, as is well known to all careful observers, has a bulbous root, and the fine roots that shoot out from the bottom are not as strong as the roots of most other grasses. It is, therefore exceedingly liable to be torn out by the roots by grazing cattle, especially if the grass is short. In a close cropped meadow where this grass has been sown, nothing is more common than to see thousands of these dried bulbs lying upon the surface. We doubt the economy of grazing a herds-grass meadow at any time. But if done at all, it should not be cropped after the first of November in this latitude.

The roots of all the grasses are designed to be covered with their own leaves and stalks during the winter. These and the snow protect them from the alternate freezings and thawings, and bring them out in good condition in the spring. The farmer who undertakes to thwart the designs of Nature in this respect, will find it a very expensive business. The little that he saves in feed now, he loses next season in the diminished yield of the pasture or the meadow. We ought always to manage so as to have nature working with us, instead of against us. This is one of the evils of overstocking farms. The farmer is afraid that he has not quite fodder enough for winter, so he pastures till the ground is frozen. He cuts less hay for the next season, and he is still more sorely tempted to pasture.

It is quite as bad for the cattle as it is for the land If they have no fodder in the month of November, they lose rather than gain upon pasture, unless it is much better than the average. Every animal ought to go into the stable in a thriving condition—if not fat, at least in full flesh. They are then easily kept thriving upon good hay, or upon hay and roots, straw and meal. After several years' close observation directed to this particular point, we do not think any thing is gained by pasturing in this latitude, and north of it, after the first of this month. All the grasses must have time to cover their roots in order to make flush feed next season. Cattle foddered through a part of October, and brought to the stable about the first of November, in good flesh, are easily wintered. It is better management to buy hay or to sell stock, than to pinch the pastures by close feeding.—*Am. Agriculturist.*

Advantages of Deep Draining.

The following remarks were made at a late meeting of the Surrey (England) Agricultural Association, by an English agriculturist, Mr. Butcher, on receiving a prize for the best practical results of draining.

Entering upon an explanation of his plan of drainage, he avowed himself to be a deep drainer,

and to have been so for the last thirty years. He remembered to have been laughed at for placing a main drain thirteen feet deep. In the place where he had carried on his operations the surface drainage had been attempted by one after another most unsuccessfully, but the needs still remained just the same, and could not be cured. He, however, having plenty of energy, and the owner placing at his disposal plenty of money, he had succeeded in reclaiming an estate which had been represented as irreclaimable. He felt pleased that he had succeeded, because the old men of the day gone were unable to find out the secret. He found it thus: that while others were content with mere surface-drains he dug deeper and deeper until he came down to the springs. He made a deep drain, while his general drainage was about four feet, though on coming into the farm he found his neighbor's drainage about two feet. He felt that the land he had drained was drained efficiently. He advised that land should not be drained in small portions, and with furrows; but even in a clay soil, to allow the moisture to pass quickly through, as if through a colander, without leaving any of it to adhere to the surface. If the water was required to be carried off the surface, must be done by plowing on a flat surface; and whatever draining was done on a stiff land was required to be done deep. On meadow land it was found necessary to be careful, and to drain on a proper system, with the drains not too closely connected; always keeping one consideration in mind—not to study an artifical position, but to take nature's surface; and as nature makes the fall of the land, let the worxmen take the cut.

Agricultural Intelligence.

Herefords in Canada and Australia.

In our impression of last week we gave a brief abstract of a very interesting Agricultural Meeting, held under the auspices of the Provincial Agricultural Society of Canada, in which the name of F. W. Stone, Esq., the newly-elected president of that important national society, was prominently placed as one of those who have for the past few years taken a lively interest in the agricultural progression of that colony, and whose importation of Herefords last year from the herd of Lord Bateman were so generally admired at their recent show. The readiness with which those animals become acclimatised induced their spirited owner to send further commissions to the mother country, and the following lots were purchased for him at the sale of the late Lord Berwick's herd, viz., Graceful (168) Wildrose (180), Sweetheart (182); to these heifers were added the bull calf Sailor (219) and the lot shipped in the steamer "North American" from Liverpool to Canada a short time since. Whilst it gives us great pleasure to record such endeavours in the northern portion of the western hemisphere, it also gives us equal pleasure to be enabled to speak of the well-doing of this valuable race of animals in the southern part of the eastern hemisphere, as the fame attached to the numerous exportations which it has been our pleasure to notice would soon cease, were there any disappointment experienced with the animals after arrival in those foreign lands, where they are destined to form the foundation of future herds. And here, we think, we cannot do better than give an extract from a letter before us, verbatim: "The Herefords have done much better than the Durhams: the bulls do well, and keep in excellent condition; the cows are all fat, they have never been shut up for any length of time, having done very well out at grass; but I have had great difficulty in keeping the Durham bulls in condition, they appear to do nothing but run about when out, until they become as poor as crows." The Herefords here alluded to were selected by Mr. W. Bostock, and sent to his Australian possessions, from the herds of Mr. Monkhouse, The Stow; Mr. Rea, of Westonbury; and that of the late Lord Berwick.—*Mark Lane Express, Nov.* 11.

Horticultural.

Hamilton Horticultural Club, &c.

The following is the Annual Report of this club, submitted at a recent meeting.

Hamilton, 1st October, 1861.

Mr. President and Gentlemen,—

Your Directors in presenting this their fourth Annual Report, beg to congratulate the members on the continued success and prosperity of the club. At no time since its formation has the attendance of members been more regular than during the past year, and the interest manifested in the meetings, and everything connected with the usefulness of the association has been very encouraging. During the year which commenced on 18th October 1860, and ended 3rd September 1861, there have been twelve regular meetings. The subjects brought forward at the meetings have been varied, and excited lively interest during their discussion.

The principle subject at each meeting is as follows:

October,—Annual Meeting, election of office-bearers, &c.

November,—Discussion on Potato Disease.

PDecember,—Paper on cultivation of the Dwarf ear, by C. Meston.

January,—Report on draft of rules for Library, Discussion on circulation of Periodicals, &c.

February,—On cultivation of the Cherry, by J. Freed.

March,—Discussion on the Brassica tribe, introduced by H. Shaw.

April,—Paper on Bedding plants, by Mr. G. Laing.

May,—Discussion on hardiness of certain bulbs, D. Murray.

June,—Discussion on the effects of severe winter on hardy fruits, J. Freed.

July,—Paper on Fruit trees in Pots or the Orchard House, D. Murray.

August,—Paper on the cultivation of the Strawberry, by, J. Freed.

September,—Report from Floal Committee, G. Laing.

The attendence of members at the meetings, although not large were regular, average attendance at each meeting has been eleven.

Your Directors beg to bring under the notice of the Club some of the new features introduced during the year, one of which is the publication in the *Canadian Agriculturist* of subjects brought before the meetings, and desire to tender the sincere thanks of the club to the conductors of the *Agriculturist* for the courteous manner in which they responded to our call for space in that valuable periodical for contributions emanatig from the club.

The *Gardener's Chronicle* and *Cottage Gardener* have been circulating among the majority of the members during the year, and we have no doubt many have been edified by these ably conducted papers.

Committees have been appointed for the examination of Seedling florists' flowers, that may be submitted to them for that purpose. Should the flowers so examined come up to a certain standard, they are entitled to a certificate representing to which class, first or second they belong; anything not worthy a second-class certificate is discarded.

Committees have also been appointed on fruits and vegetables—neither of those committees have been burthened with their labors hitherto; but as more attention is paid to the raising of new and superior varieties of plants, flowers and vegetables, their labors will increase, and in time will be appreciated.

At the commencement of the year the names of members on the roll were twenty, two members left the city during the year, four were taken off the roll for non-attendance, and eleven new members have been admitted during the same period. There are now twenty-five members, most of whom take a deep interest in our meetings.

In conclusion, we beg to call on every member of the club to do his duty, his simple duty, and we dare to say that the footing we have now gained will not only be maintained by us, but but by our successors, until the good effects of the Hamilton Horticultural Club will be felt in

CHAS. MESTON, *Sec.*

[We hope to see several societies of a similar character to the Hamilton Horticultural Club established in different parts of the Province, and subjoin its Rule and Regulations for the benefit of such as may be disposed to aid in the formation of such societies. EDS.]

HAMILTON HORTICULTURAL CLUB, AND LIBRARY ASSOCIATION. INSTITUTED SEPTEMBER, 1856.

REGULATIONS.

I. Persons desirous of admission to the Club shall be recommended by two members at one meeting, and balloted for at the next meeting. The votes of two-thirds of the members present being necessary for the admission of a member.

II. Members of the Club shall pay an annual subscription of one dollar, in advance, for defraying necessary expenses. Any surplus and donations to be applied for the purchase of Horticultural Publictions, and the formation of a Library. A payment of ten dollars by a member shall entitle him to the benefits of the Club for life.

III. The office-bearers to consis of a President, Vice-President, Secretary, Treasurer and three Directors, to be elected annually at the annual general meeting of the Club, on the first Tuesday in October. Three of the office-bearers, one of whom, however, must be President or the Secretary, to be a quorum for the transaction of business.

IV. The duty of the president will be to preside and preserve order at the meetings, and regulate the order of procedure by enforcing the rules for the regulation of debates or discussions.

V. The duty of the Secretary to record the proceedings, giving a short account of the discussions and results in the minute book.

VI. The duty of the Treasurer to collect and pay moneys and keep the accounts, submitting a correct statement at the annual meeting.

VII. The meetings will be held on the first Tuesday of every month, at 7 o'clock, P. M., in winter, and 8 o'clock, P. M, in summer.

VIII. The business of the meetings will be: 1st. The exhibition of any objects of interest, not to exceed half an hour. 2nd. Reading, correcting if necessary, and approving the minutes of previous meeting- 3. Balloting for new members. 4th. Reports fromStanding Committee. 5th. Reading an Essay on some subject announced and approved at a previous meeting, and remarks on the same by the members, in rotation. 6th. Answering queries by members according to a notice on the roll or table of subjects.

IX. To any meeting a member may introduce a friend.

Canada wherever the art is known. All of which is respectfully submitted,

X. No discussion or conversation allowed on any subject not connected with the objects of the Club.

XI. Any member interrupting the proceedings by improper conduct, or disturbing the harmony of a meeting may be expelled by a majority of the members present.

XII. Any addition may be made to the rules by a majority, but no alteration shall be made of a rule once established, except by a vote of at lest two-thirds—in either case a month's notice of the addition or alteration must be given.

REGULATIONS OF THE LIBRARY. 1861.

The Librarian shall receive, and take charge of all Books and Periodicals belonging to the Hamilton Horticultural Club, and shall make and keep account of the Books and Periodicals in the Library, in such form as the Directors may determine.

Rule 1st. The Library shall be opened for receiving and giving out books every Saturday, between the hours of 8, A. M. and 6, P. M.

2nd. The Librarian on application by any member, will issue one volume which may be retained for the time specified therein, if kept longer without being renewed, five cents shall be exacted for every week, or part of a week, it may be so kept.

3rd. In order that the Librarian may be enabled to report on the state of the Library, all Books and Periodicals must be returned at least one week previous to the annual meeting of the Club, in each year, under a penalty of twenty-five cents, for every week or part of a week, they may be retained beyond that period. The Library at this time shall be closed, until after the election of officers shall have taken place, when it shall again be opened for issuing and receiving Books. Members shall not be entitled to receive Books until they have paid such fines as they may have incurred.

4th. When a Book is damaged or lost, the injury must be repaired, or the book replaced as the Directors shall determine

5. The non-compliance with any of the above rules, shall be sufficient for the expulsion of any member

OFFICE-BEARERS FOR THE ENSUING YEAR:

J. A. Bruce, Esq. ..... *President.*
D. A. McNab, Esq. ..... *Vice President.*
F. C. Bruce, Esq ..... *Treasurer.*
C. Meston, Esq ..... *Secretary.*

DIRECTORS.

George Laing. Hugh Shaw.
D. Murray.

Hamilton Oct. 1st, 1861.

Culture of Flowers.

Mr. Editor,—The short descriptive article on the Crystal Palace grounds and flower beds in England, that appeared in your last journal, highly deserves attention, as being not only interesting, but very instructive, and calculated, I think, to lead to enquiry. Particularly so at the present time, when Florlculture is commanding so much notice in the mother country. During the last few years, the flower-bedding system has undergone a very great change for the better; there the objects in view are well considered and effectually carried out. It is to be regretted that so little attention is paid to these things in this country, the old random way of planting seems still to be adhered to and practiced, without thought or consideration; this is wrong, and ought to be discontinued, and arrangements made and adopted to make the most of things that are.

In the old country, from the Royal Gardens down to the humble cottages the flower-bedding system is particularly attended to; high and low, rich and poor, all unite in forwarding this object. This is as it ought to be, every one trying to excel his neighbour in his best planned bed, linked chain, or ribbon-border. Now the way of accomplishing this lies in the arranging of the plants and colours, and to do so effectually the operator must have a thorough knowledge of the plants, their nature, habits, colour of flower, time and duration of flowering. When the whole is properly carried out a very pleasing effect will be produced and very much taste displayed. It must be borne in mind that the foliage of plants, as well as their flowers, has a good deal to do in the matter, and must not be forgoten. A full consideration of those things will not be without its good effects on the cultivator; without it he may rest assured nothing really good can be arrived at; it will afford very pleasing exercise for the mind during the dull winter months, when looking through the bedding plants for the next spring. You may hear from me again on this subject. In conclusion I must say that I feel convinced that we have in this Province just as keen ribandists as there are in all England, if they could be induced to come out. Out I trust they will come next year, and get all the ladies and artizans to join them.

Yours, &c.,
Hortus.

Hamilton, 28th Nov., 1861.

Transactions.

List of Prizes Awarded,

AT PROVINCIAL EXHIBITION, LONDON, SEPTEMBER 24TH TO 27TH, 1861.

HORSES.

CLASS I.—BLOOD HORSES—(15 Entries.)

Judges.—Messrs. Geo. D. Morton, Bradford; James Armstrong, Union, Elgin; Henry Battell, Cobourg.

Best thorough-bred stallion, Wm. Saul, West Nissouri, $40; 2nd do, Hiram Brotherhood, Iona, $25; 3rd do, Thos. C. Hillyer, Simcoe, $12.

Best 2 years old filly, James White, Trafalgar, $14.

Best yearling filly, James White, Trafalgar, $10.

Best mare and foal, or evidence that the foal has been lost, James White, Trafalgar, $22; 2nd do, John Thompson, Mount Vernon, $14.

Remarks by Judges.—The judges, in making their return in this class, would beg to remark that they are sorry it is not in their power to congratulate the Society on the animals exhibited in it, either as to number or quality, and would recommend the Board to investigate the pedigrees more closely. Giving prizes at the Provincial Show to animals of impure blood as thorough-bred stock, when they are not such, is only deceiving the public. They would also suggest that more encouragement be given to importers of really good blood stock, knowing, as they do, that the prices asked for such in the old country is four or five times as much as for any other kind of animals. All of which is respectfully submitted.

Class II.—Agricultulal Horses—(123 Entries.)

Judges—Jacob Young, York, Grand River; James Davidson, Paris; G. S. Burrill, Cramahe; James Lawrie, Scarborough; John P. Bull, York Township.

Best stallion for agricultural purposes, Thos. Gowland, York, County Haldimand, $40; 2nd do, Robert Edington, Indiana Township, $25; 3rd do, Joseph Johnston, Cathcart, Brant, $12.

Best 3 years old stallion, Adam Smith, St. George, $22; 2nd do, Chas. A. Woodhull, Komoka, $14; 3rd do, Archibald Frank, Cheltenham, $7.

Best 2 years old stallion, Robert Robson, London, $14; 2nd do, John Long, Waterdown, $10.

Best yearling colt, Theobald Brunnen, Sebringville, $8; 2nd do, Henry Bowman, McGillivray, $6; 3rd do, Rich'd Fanson, Exeter, $4.

Best agricultural stallion of any age, Thos. Gowland, York, Grand River, Diploma.

Best 3 years old filly, Donald Clark, Embro, $18; 2nd do, Robert Robson, London, $11.

Best 2 years old filly, George Shipley, East Williams, $14; 2nd do, Chris. Walker, London, $9; 3rd do, Henry Lock, Nilestown, $4.

Best yearling filly, Wm. Amos, McGillivray, $8; 2nd do, Robert Drany, Dorchester, $6.

Best brood mare and foal, or evidence that the foal has been lost, Thos. Gowland, York, River, $22; 2nd do, Peter Crerar, Stratford, $14; 3rd do, Christopher Walker, London, $6.

Best span matched farm or team horses, John Chote, Dorchesthr, $20; 2nd do, Dugald Brown, Iona, $15; 3rd do, Hendie & Co. London, $10.

Remarks.—The judges, in returning their list of prizes awarded in this class have pleasure in stating that their duties were fully engaged by the numerous entries in almost every section, proving that the breeding of horses for useful purposes has not been neglected. But they have to express their regret that, from want of arrangement on the part of the exhibitors, or those whose duty it was to notify them, the judges have experienced much inconvenience and delay, and would suggest the advisability of having two rings for the exhibition of horses. They would further recommend those persons who may be exhibitors in future to classify their horses more carefully; as much inconvenience, and they fear loss to individuals, must have arisen by a want of due consideration of, and attention to these important matters.

Class III.—Road or Carriage Horses—(253 Entries.)

Judges—E. Wilmot, Kingston; G. Taylor Belleville; B. Rice, Chatham.

Best roadster or carriage stallion, 4 year, old and upwards, James Armstrong, Union Elgin, $40; 2nd do, George Roach, Hamilton, $25; 3rd do, John Dickson, Etobicoke, $12.

Best do 3 years old, Charles Ross, Grovesend, $22; 2nd do, James Powell, York Township, $14.

Best do 2 years old, R. Dochstader, Mount Healy $14; 2nd do, John Gibson, Newcastle, $10; 3rd do, Alex. Burgess, Ingersoll, $5.

Best yearling colt, T. Stripp, Belmont, $8; 2nd do, John Gill, Toronto Township, $6; 3rd do, Thomas Welsh, London, $4.

Best stallion of any age, John Dickson, Etobicoke, Diploma.

Best French Canadian Stallion, J. Brown

Streetsville, $30; 2nd do, Jas. Fitzsimmons, St. Thomas, $20; 3rd do, Hendie & Co., London, $10.

Best 3 years old roadster filly, Robert L. Wright, London, $18; 2nd do, James McArthur, East Williams, $11; 3rd do, do do, $7.

Best 2 years old filly, Robt. Smith, London, $14; John Paton, Amherstburgh, $9; 3rd do, Thomas Smith, Toronto Township, $4.

Best yearling filly, Joseph Lamb, London, $8; 2nd do, S. Peters, London, $6.

Best brood mare and foal, or evidence of foal having been lost, S. Peters & Son, London, $22; 2nd do, Richard Williams, Culloden, $14; 3rd do, Thomas Armstrong, Maple, $6.

Best pair matched carriage horses, John Coot, London, $20; 2nd do, John Gage, Bartonville, $15; 3rd do, M. T. Moore & Son, St. Thomas, $10.

Best single carriage horse in harness, Wm. R. McKenney, Crowland, $10; 2nd do, John Dodrick, Port Rowan, $8; 3rd do, Joseph Lamb, London, $6.

Best Saddle horse, John Nickerson, Delhi, $10; 2nd do, William Ferris, London, $8; 3rd do, T. Sharon, Southwold, $6.

Extra Entries.—Chas. Perley, Burford, pair of hacks, commended; Peter E. McKerral, Chatham, pair of ponies, commended; Albert G. Hatch, Brantford, pair of hacks, commended; G. L. Ridout London, pony, $3.

CLASS IV.—HEAVY DRAUGHT HORSES—(43 Entries.)

Judges—Richard Saul, Strathroy; John Hunter, Goderich; Matthew Jones, Darlington.

Best heavy draught stallion, Robert Ferris, Richmond Hill, $40; 2nd do, Joseph Thompson, Markham, $25; 3rd do, John Miller, Brougham, $12.

Best 3 years old stallion, Joseph Walker, Falkirk, $22; 2nd do, R. A. Hartley, Chinguacousy, $14.

Best 2 years old stallion, John Shedden, Toronto, $14; 2nd do, Edward Little, London, $10.

Best draught stallion of any age,—only one shown, did not get a prize in his own class—James Daziel, Ayr, commended.

Best 3 years old filly, only one shown, 3rd prize, Christopher Waugh, London, $6.

Best 2 years old filly, George Miller, Markham, $14; 2nd do, John Henderson, London, $9.

Best yearling filly, George Miller, Markham, $8.

Best broad mare and foal, or evidence that the foal has been lost, John Crawford, Scarboro', $22; 2nd do, George Miller, Markham, $14.

Best span of draught horses, Hendrie & Co., London, $20; 2nd do, do, $15; 3rd do, do, $10.

CLASS V.—HORSES FOR GENERAL PURPOSES, THE PRINCE OF WALES PRIZE.—(38 Entries.)

Judges—The judges of all the other classes united.

Best stallion for general purposes, Prize presented by His Royal Higness the Prince Wales, James Armstrong, Union, Elgin, $60. $60.

Remarks.—The Judges after a full and careful consideration of the horses entered in this class, of which they felt pleasure in seeing so good a display, decided their award in favor of No. 5 (as above).

EXTRA CLASS.—ASSES AND MULES.—(3 Entries.)

William Henry, Stamford, 1 jack, imported from Spain, commended, $10; do, do, 1 jenny, imported from Spain, commended, $10.

CATTLE.

CLASS VI.—DURHAMS.—(178 Entries.)

Judges—Richard Jackson, Guelph; A. Alcorn, Cobourg; Thomas Peirson, Oshawa; Daniel Perley, Brantford; Robert Kirkwood, Hamilton; H. J. Laury, Hamilton.

Best bull 4 years old, F. W. Stone, Guelph, "Thrid Grand Duke," $36; 2nd do, George Black, St. Mary's, "Sir Charles Napier," $24; 3rd do, Donald Robertson, Queenston, "Fremont," $16; 4th do, James Anderson, Guelph, "Wolviston 1st," $8.

Best 3 years old bull, James White, Trafalgar, "Milton," $32; 2nd do, George Miller, Markham, "Prince of Wales," $20; 3rd do, John Zavitz, London, "Billy O'Gaunt," $12; 4th do, John P. Wheeler, Scarborough, "President," $6.

Note.—The four prize bulls in this section are of very superior quality.

Best 2 years old bull, J. R. Pettitt, Grimsby, "Alfred," $24; 2nd do, John Snell Chinguacousy, "Cobden," $16; 3rd do, Robt. Routledge, London, "General Williams,".

$9 ; 4th do, Henry Welford, Woodstock, "Duke of York," $5.

Best 1 year old bull, John Miller, Pickering, "Canadian Punch," $20; 2nd do, G. H. Phillips, Prescott, "Master Maradan," $12 ; 3rd do, F. W. Stone, "Prince of Wales," $8 ; 4th do, G. H. Phillips, Prescott, "Master McHale," $4.

Best bull calf (under 1 year), John Snell, Chinguacousy, "Baron Solway," imported from Britain, 1861, $48 ; 2nd do, John Miller, Pickering, "Heather Jock," $10; 3rd do, George Robson, London, "Commodore," $6; 4th do, John Snell, Chinguacousy, $3.

Best Durham bull of any age, F. W. Stone, Guelph, "Third Grand Duke," diploma.

Best cow, F. W. Stone, Guelph, "Martha," $20 ; 2nd do, Wm. Shore, St. Thomas, "Florence," $12; 3rd do, Geo. H. Phillips, Prescott, "Fragrance," $8 ; 4th do, George Miller, Markham, "Snowdrop," $4.

Best 3 years old cow, Thos. Stock, Waterdown, "Betsy," $16 ; 2nd do, George Miller, Markham, "Queen of the May," $10 ; 3rd do, Arthur Hogge, Guelph, ——, $6; H. P. Welford, Woodstock, "Wild Eyes," $4.

Best 2 years old heifer, Thomas Stock, Waterdown, "Lizzie," $12; 2d do, G. Miller, Markham, "Diadem," $8; 3rd do, Geo. H. Phillips, Prescott, "Maradan 8th," $5 ; 4th do, Arthur Hogge, Guelph, "Mary," $4.

Best 1 year old heifer, F. W. Stone, Guelph, "Isabella 4th," $10 ; 2nd do, do, "Matchless," $6; 3rd do, Wm. Shore, St. Thomas, "Daphne," $4 ; 4th do, Geo. Robson, London, "Satin," $2.

Best heifer calf (under one year), F. W. Stone, Guelph, "Sanspareil 7th," $6; 2nd do, do, "Cambridge 3rd," $4; 3rd do, John Iles, Puslinch, "Martha," $2 ; 4th do, Geo. Miller, Markham, —— $1.

Best herd of Durhams, consisting of one bull, and not less than four cows *or* heifers, or cows *and* heifers of any age, F. W. Stone, Guelph, $40.

CLASS VII.—DEVONS.—(116 Entries.)

Judges—D. W. Freeman, Simcoe ; John A. Nellis, Grimsby; Philip Gregory, Port Dalhousie; John Bobier, Tyrconnel.

Best bull 4 years old and upwards, Charles A. Woodhull, Komoka, $36; 2nd do, W. H. Loch, St. Thomas, $24; 3rd do, H. D. Smith, Aldborough, $12; 4th do, Benjamin Rice, Chatham, $8.

Best 3 years old bull, Christopher Beer, Katesville, $32; 2nd do, Chas. Sifton, Lambeth, $20; 3rd do, Richard S. Cleave, Duart, $12; 4th do, John Mason, St. Mary's, $6.

Best 2 years old bull, John Tuckey, Lobo, $24 ; 2nd do, Daniel Tye, Wilmot, $16; 3rd do, Christopher Courtice, Darlington, $9; 4th do, do, $5.

Best 1 year old bull, William Scott, New Hamburgh, $20; 2nd do, Daniel Tye, Wilmot, $12 ; 3rd do, Christopher Courtice, Darlington, $8 ; 4th do, John Pincombe, London, $4.

Best bull calf (under 1 year), William H. Lock, St. Thomas, $16 ; 2nd do, S. Peters & Son, London, $10; 3rd do, John Pincombe, London, $6; 4th do, Christopher Courtice, St. Thomas, $3.

Best Devon bull of an age, W. H. Lock, St. Thomas, diploma.

Best cow, W. H. Lock, St. Thomas, $20 ; 2nd do, Christopher Courtice, Darlington, $12; 3rd do, John Mason, St. Mary's, $8 ; 4th do, John Pincombe, London, $4.

Best 3 years old cow, John Pincombe, London, $16 ; 2nd do, do, $10; 3rd do, Wm. H. Lock, St. Thomas, $6 ; 4th do, John Pincombe, London, $4.

Best 2 years old heifer, John Pincombe, London, $12 ; 2nd do, W. H. Lock, St. Thomas, $8; 3rd do, Daniel Tye, Wilmot, $5 ; 4th do, W. J. Lock, St. Thomas, $3.

Best 1 year old heifer, Henry Lock, Nilestown, $10; 2nd do, do, $6 ; 3rd do, John Pincombe, London, $4 ; 4th do, W. H Lock, St. Thomas, $2.

Best heifer calf (under 1 year), John Pincombe, London, $6 ; 2nd do, W. H. Lock, St. Thomas, $4 ; 3rd do, do, $2 ; 4th do, do, $1.

Best herd of Devons, consisting of one bull, and not less than four cows and heifers, W. H. Lock, St. Thomas, $40.

NOTE BY JUDGES.—The first prize aged bull was not entered for the diploma.

CLASS VIII.—HEREFORDS.—(21 Entries.)

Judges—John Paton, Amherstburgh; John Salkeld, Goderich ; Edward Jones, Thorold; James Archibald, Huntingdon.

Best bull 4 years old and upwards, James R. McMicking, Stamford, imported from the United States since last Exhibition, $72.

Best 1 year old bull, F. W. Stone, Guelph, imported from England, since last show, $60.

Best bull calf (under 1 year) Henry J. Laury, Hamilton, $16.

Best Hereford bull of any age, F. W. Stone, Guelph, diploma.

Best cow, F. W. Stone, Guelph, imported from England since last Exhibition, $40; 2nd do, J. R. McMicking, Stamford, $12; 3rd do, H. J. Laury, Hamilton, $8.

Best 3 years old cow, F. W. Stone, Guelph, imported from England since last exhibition, $32; 2nd do, J. R. McMicking, Stamford, $10; 3rd do, F. W. Stone, Guelph. $6.

Best 2 years old heifer, F. W. Stone, Guelph, imported from England since last show, $24; 2nd do, F. W. Stone, Guelph, $8; 3rd do, do. $5; 4th do, J. R. McMicking, Stamford, $3.

Best 1 year old heifer, J. R. McMicking, Stamford, $10.

Best heifer calf (under one year) F. W. Stone, Guelph, $6.

Best herd of Herefords, F. W. Stone, Guelph, $40.

Extra Entries.—Herefords, F. W. Stone, Guelph, 3 years old heifer, in calf, imported, highly commended, $16.

Remarks by Judg s.—We think it proper to notice the splendid herd of Herefords lately imported from the best stock in England into this province. We consider this the finest importati n that we have seen, and that Mr. Stone is justly entitled to the highest praise for his efforts to improve the stock of this province. In our opinion it is desirable that such stock should not be overfed, as, for breeding purposes, fat cattle are more likely to deteriorate the progeny, as well as to endanger the lives of the cattle themselves.

CLASS.—AYRSHIRES—(70 Entries.)

Judges—The same as for Herefords.

Best bull 4 years old and upwards, James Nimmo, Camden East, $36; 2nd do, Joseph Boyle, West Flamboro', $24; 3rd do, John Waddell, Sarnia, $16; 4th do, W. H. Essery, Arva, $8.

Best 3 years old bull, R. L. Denison, Toronto, $32; 2nd do, Wm. Carey, Flamboro' West, $20; 3rd do, Hiram G. Frank, Strathroy, $12; 4th do, Joseph Jardine, Saltfleet, $6.

Best 2 years old bull, W. H. Essery, Arva, $24; 2nd do, Geo. Morton, Morton, Leeds, $16; 3rd do, George Stanton, Paris, $9.

Best 1 year old bull, P. R. Wright, Cobourg, $20; 3nd do, James Nimmo, Camden East, $12; 3rd do, George Morton, Morton, $8; 4th do. R. L. Denison, Toronto, $4.

Best bull calf (under 1 year,) Geo. Morton, Morton, $16; 2nd do, do do, $10; 3rd do, R. L. Denison, Toronto, $6.

Best Ayrshire bull, of any age, P. R. Wright, Cobourg, Diploma.

Best cow, P. R. Wright, Cobourg, $20; 2nd do, James Nimmo, Camden East, $12; 3rd do, Joseph Jardine, Saltfleet, $8; 4th do, Simon Beattie, Scarboro', $4.

Best 3 years old cow, P. R. Wright, Cobourg, $16; 2nd do, do do, $10, 3rd do, R. L. Denison, Toronto, $6; 4th do, Chris. Waugh, London, $4.

Best 2 years old heifer, P. R. Wright, Cobourg, $12; 2nd do, Geo. Morton, Morton, $8; 3rd do, R. L. Denison, Toronto, $5; 4th do, Geo. Morton, Morton, $3.

Best 1 year old heifer, P. R. Wright, Cobourg, $10; 2nd do, do do, $6; 3rd do, Geo. Morton, Morton, $4; 4th do, do do, $2.

Best heifer calf (under one year,) George Morton, Morton, $6; 2nd do, P. R. Wright, Cobourg, $4; 3rd do, Christopher Waugh London, $2.

Best herd of Ayrshires, one bull and four cows or heifers, P. R. Wright, Cobourg, $40.

Remarks of Judges.—In noticing the above class we are glad to see so many good specimens exhibited, but amongst them were a number that, either from breeding in and in, starvation, or some other cause, were poor representatives of this important dairy class. We think it would be well for the Province if the same effort were made to improve this class, as is shown in the other classes, as, for dairy purposes, there is no stock to equal them.

CLASS X.—GALLOWAY CATTLE—(77 Entries.)

Judges—William Roddick, Port Hope; John Dunlop, Woodstock; Wm. Peers, Woodstock.

Best bull, 4 years old and upwards, John Stuart, Mount Albion, $36; 2nd do, James Grahame, Vaughan, $24; 3rd do, John McClain, Clover Hill, $16; 4th do, John Roddick, Brantford, $8.

Best 3 years old bull, John Nickerson, Delhi, $32; 2nd do, John Fleming, Vaughan, $20; 3rd do, James Cobane, Mono, $12; 4th do, Joseph Jardine, Saltfleet, $6.

Best 2 years old bull, Jeremiah Lyons, West Flamboro', $24; 2nd do, E.W. Thomson, York Township, $16.

Best 1 year old bull, John Snell, Chinguacousy, $20; 2nd do Alex. Kerr, Westminster, $12.

Best bull calf, (under 1 year), George Miller, Markham, $16; 2nd do, W. H. Peter-

son, Woolwich, $10; 3rd do, Alex. Kerr, Westminster, $6; 4th do, John Snell, Chinguacousy, $3.

Best cow, John Snell, Chinguacousy, $20; 2nd do, do, do, $12; 3rd do, John Fleming, Vaughan, $8; 4th do, Jeremiah Lyons, West Flamboro', $4.

Best 3 years old cow, John Fleming, Vaughan, $16; 2nd do, W. H. Peterson, Woolwich, $10; 3rd do, John Snell, Chinguacousy, $6.

Best 2 years old heifer, John Snell, Chinguacousy, imported from Scotland, 1861, $24; 2nd do, John Snell, Chinguacousy, $8; 3rd do, George Miller, Markham, $5; 4th do, Jeremiah Lyons, West Flamborough.

Best 1 year old heifer, John Snell, Chinguacousy, $10; 2nd do, Geo. Miller, Markham, $6; 3rd do, do, do, $4.

Best heifer calf, (under one year) John Snell, Chinguacousy, $6; 2nd do, Jeremiah Lyons, West Flamboro', $4; 3rd do, John Fleming, Vaughan, $2; 4th do, Andrew Kyle, Dumfries, subject to proof of breeding, $1.

Best herd of Galloways, John Snell, Chinguacousy, $40.

Extras.—Lachlan Curry, Belmont, West Highland Cattle—Aged bull, $12; two year old bull, $8; aged cow, $8; three year old cow, $5; two year old heifer, $4; bull calf, $5.

SPECIAL AWARD—POLLED ANGUS CATTLE.

Mr. James Nimmo, of Camden East, having exhibited certain cattle in the Galloway class, they were adjudged prizes in that class, but a protest being preferred against the awards, on the ground that the cattle were not true Galloways, but of the polled Angus or Aberdeen breed, the class was rejudged, and Mr. Nimmo's cattle, in consideration that they had previously been allowed to compete as Galloways, and that he could not therefore properly be blamed for entering them in that class, were set apart in a class by themselves, and awarded the following prizes:—polled Angus or Aberdeen bull, first prize, $32; do. cow, first prize, $20; do. do. second prize, $12; do. 2 year old heifer, first prize, $12; do. heifer calf, first prize, $6; do. herd, $40.

Remarks by Judges.—The judges recommend that the pure bred Galloway and polled Angus breeds be allowed to register in the herd book, in order to prevent future difficulties.

CLASS XI.—BULLS OF ANY BREED.—(18 Entries.)

Judges.—A committee selected from the judges of all the other classes of cattle.

Best bull of any age or breed, F. W. Stone, Guelph, "Third Grand Duke," diploma and silver medal.

Remark.—The judges recommend this prize to be omitted another year, being unsatisfactory to the breeder, as well as a puzzle to the judges.

CLASS XII.—GRADE CATTLE.—(136 Entries.)

Judges.—Dr. Richmond, Gananoque, R. B. Ireland, Nelson; John S. Burley, Lennox.

Best cow, William P. Frank, London, $20; 2nd do, William Buttery, Strathroy, $12; 3rd do, John Stiles, London, $8; 4th do, Richard Adams, Woodstock, $5.

Best four year old grade cow, Samuel Peters & Son, London, $20; 2nd do, J. R. Pettit, Grimsby, $12; 3rd do, Richard Adams, Woodstock, $8; 4th do, G. W. Boggs, St. Thomas, $5.

Best 3 years old cow, Samson Baker, Simcoe, $16; 2nd do, John Pearce, Tyrconnell, $6; 4th do, Francis Nichol, London, $4.

Best 2 years old heifer, Thomas Stock, Waterdown, $12; 2nd do, Arthur Hogge, Guelph, $8; 3rd do, H. P. Welford, Woodstock, $5; 4th do, Allan Routledge, London, $3.

Best 1 year old heifer, Arthur Hogge, Guelph, $10; 2nd do, Allan Routledge, London, $6; 3rd do, John Pearce, Tyrconnell, $4; 4th do, George McFarland, McGillivray, $2.

Best heifer calf, under 1 year, Sampson Baker, Simcoe, $6; 2nd do, do, do, $4; 3rd do, Samuel Stevenson, London, $2; 4th do, John Stiles, London, $1.

THE FERGUS CUP.

Best grade heifer, not more than two years old on March 1, 1861, the produce of a pure bred Durham bull, having a recorded pedigree, and of a cow of any breed, not more than one remove from thorough bred. Prize presented by Hon. A. Fergusson, Thomas Stock, Waterdown, Silver Cup.

Remarks of Judges.—There was a fine lot of Ayrshire grades shown in this class, but there ought to be a separate class for them as milkers, as they are the best adapted for that purpose, and do not show favourably with the short horn grades.

CLASS XIII.—FAT AND WORKING CATTLE, ANY BREED.—(78 Entries.)

Judges.—Phillip Armstrong, Toronto; Henry Andrews, Kingston; James Vine, Niagara.

Best fat ox or steer, James White, Trafalgar, $30; 2nd do, John O'Rourke, Shakespeare, $20; 3rd do, do, do, $12.

Best fat cow or heifer, William Elliott, Kingston, $30; 2nd do, John Pearce, Tyrconnell, $20; 3rd do, George Alway, Komoka, $12.

Best yoke of working oxen, John Kennedy, London, $20; 2nd do, William Trowbridge, London, $12; 3rd do, John Sinclair, St. Thomas, $8.

Best yoke of 3 years old steers, John Pincombe, London, $16; 2nd do, Thomas Routledge, London, $10.

Best team of oxen, not less than 10 yoke from one township, the property of any number of persons, John Nixon, for the Township of Westminster, $40.

NOTE BY JUDGES.—As a whole, the cattle in this class are a better lot than ever exhibited heretofore.

SHEEP.

CLASS XIV.—LEICESTERS—(208 Entries.)

Judges—J. B. Ireland, Waterdown; John Johnston, Ayr; Robert Wickett, York, Grand River.

Best ram, two shears and over, Jno. Snell, Chinguacousy, $16; 2nd do, Simon Beattie, Scarboro'. $10; 3rd do, Christopher Walker, London, $4.

Best shearling ram, John Miller, Pickering, imported from England 1861, $48: 2nd do, John Snell, Chinguacousy, $10; 3rd do, do, do, $4.

Best ram lamb, C. Walker, London, $8; 2nd do, do, do, $4; 3rd do, W. Douglas, Onondaga, $2.

Best two ewes, two shears and over, C. Walker, London, $16; 2nd do, J. S. Smith, McGillivray, $12; 3rd do, J. Miller, Pickering, $6.

Best two shearling ewes, C. Walker, London, $12; 2nd do, J. Long, London, $8; 3rd do, Thomas Friendship, London, $4.

Best two ewe lambs, C. Walker, London, $6; 2nd do, J. Miller, Pickering, $4; 3rd do, J. Snell, Chinguacousy, $2.

CLASS XV.—COTSWOLDS—(57 Entries.)

Judges—Wm. Dickson, Beverly; Jno. Campbell, Waterloo; Mark Gray, Halton; Thos. Arkell, Puslinch.

Best ram, two shears and over, F. W. Stone, Guelph, $16; 2nd do, do, do, $10; 3rd do, J. Snell, Chinguacousy, $4.

Best shearling ram, F. W. Stone, Guelph, $16; 2nd do, J. Snell, Chinguacousy, $10; 3rd do, G. Miller, Markham, $4.

Best ram lamb, J. Snell, Chinguacousy, $8; 2nd do, Thomas Smith, Toronto Township, $4; 3rd do, F. W. Stone, Guelph, $4.

Best two ewes, two shears and over, F. W. Stone, Guelph, $16; 2nd do, J. Snell, Chinguacousy, $12; 3rd do, F. W. Stone, Guelph, $6.

Best two shearling ewes, F. W. Stone, Guelph, $12; 2nd do, do, do, $8; 3rd do, do, do, $4.

Best two ewe lambs, F. W. Stone, Guelph, $6; 2nd do, J. Snell, Chinguacousy, $4; 3rd do, F. W. Stone, Guelph, $2.

CLASS XVI.—CHEVIOTS—(34 Entries.)

Judges—Henry Wade, Port Hope; John Gibb, Lindsay; Thomas Allin, Whitby.

Best ram, two shears and over, James Dickson, Clarke, $16; 2nd do, do, do $10; 3rd do, David Elliott, West Flamboro', $4.

Best shearling ram, George Miller, Markham, imported from Scotland, 1861, $48; 2nd do, David Elliott, West Flamboro', $10; 3rd do, Thomas Guy, Whitby, $4.

Best ram lamb, David Elliott, West Flamboro', $8; 2nd do, do, do, $4; 3rd do, Jas. Dickson, Clarke, $2.

Best 2 ewes, two shears and over, George Miller, Markham, imported from Scotland, 1861, $32; 2nd do, James Dickson, Clarke, $12; 3rd do, David Elliott, West Flamboro, $6.

Best two shearling ewes, Thomas Guy, Whitby, $12; 2nd do, David Elliott, West Flamboro', $8; 3rd do, Geo. Miller, Markham, $4.

Best 2 two ewe lambs, David Elliott, West Flamboro', $6; 2nd do, do, do, $4; 3rd do, Thomas Guy, Whitby, $2.

CLASS XVII—OTHER BREEDS OF LONG WOOLED SHEEP, NOT LEICESTERS, COTSWOLDS, OR CHEVIOTS—(81 Entries.)

Judges—Henry D. Smith, Aldborough; Jno. P. Wheler, Scarboro'; Jas. Petty, Kippen.

Best ram, two shears and over, John Robson, London, $16; 2nd do, Thomas Guy, Oshawa, $10; 3rd do, Thos. Smith, Toronto Township, $4.

Best shearling ram, John Miller, Pickering, imported from Britain, 1861, $48; 2nd do, George Miller, Markham, $10; 3rd do, John Snell, Chinguacousy, $4.

Best ram lamb, George Jackson, Toronto Gore, $8; 2nd do, Jno. Robson, London, $4; 3rd do, Alfred Jeffrey, Vaughan, $2.

Best 2 ewes, two shears and over, John Miller, Pickering, $16; 2nd do, John Snell, Chinguacousy, $12; 3rd do, John Routledge, London, $6.

Best 2 shearling ewes, John Miller, Pickering, $12; 2nd do, John Snell, Chinguacousy, $8; 3rd do, Jas. S Smith, McGillivray, $4.

Best 2 ewe lambs, John Miller, Pickering, $6; 2nd do, John Snell, Chinguacousy, $4; 3rd do, John Routledge, London, $2.

CLASS XVIII.—SOUTHDOWNS—(78 Entries.)

Judges—W. Balkwill, London; J. J. Farley, Belleville; H. Puddicombe, Wilmot.

Best ram, two shears and over, F. W. Stone, Guelph, $16; 2nd do, John Spencer, Whiting, $10; 3rd do, F. W. Stone, Guelph, $4.

Best shearling ram, F. W. Stone, Guelph, imported from England, 1861, $48; 2nd do, F. W. Stone, Guelph, $10; 3rd do, G. J. Miller, Niagara, $4.

Best ram lamb, Daniel Tye, Wilmot, $8; 2nd do, James Dickie, North Dumfries, $4; 3rd do, Joseph Peers, Woodstock, $2.

Best 2 ewes, two shears and over, James Maxwell, Paris, $16; 2nd do, Joseph Peers, Woodstock, $12; 3rd do, John Benton, Glanford, $6.

Best 2 shearling ewes, John Spencer, Whitby, $12; 2nd do, N. & T. Bethel, St. Catherines, $8; 3rd do, Joseph Peers, Woodstock, $4.

Best 2 ewe lambs, James Dickie, North Dumfries, $6; 2nd do, John Spencer, Whitby, $4; 3rd do, John Renton, Carluke, $2.

CLASS XIX.—MERINOS AND SAXONS—(32 Entries)

Judges—H. J. Brown, Niagara; Stephen P. Niles, Hillier; Wm. Kern, Dundas.

Best ram, two shears and over, G. W. Miller, Grantham, $16; 2nd do, Edward Arkland, Whitby, $10; 3rd do, Jacob Rymal, Glanford, $4.

Best shearling ram, Edward Arkland, Whitby, imported from United States, 1861, $32; 2nd do, do, do, $10; 3rd do, Alex. Young, Glanford, $4.

Best ram lamb, E. Arkland, Whitby, imported from the United States, 1861, $16; 2nd do, Jacob Rymal, Glanford, $4; 3rd do, Alex. Young, Glanford, $2.

Best 2 ewes, two shears and over, Edward Arkland, Whitby, imported from the United States, 1861, $24; 2nd do, do, do, $12; 3rd do, Jacob Rymal, Glanford, $6.

Best 2 shearling ewes, E. Arkland, Whitby, imported from United States, 1861, $18; 2nd do, do, do, $8; 3rd do, Jacob Rymal, Glanford, $4.

Best 2 ewe lambs, Jacob Rymal, Glanford, $6; 2nd do, Alex. Young, Glanford, $4.

CLASS XX.—OTHER PURE BRED SHORT WOOLED SHEEP, NOT SOUTHDOWNS, MERINOS OR SAXONS—(49 Entries.)

Judges—The same as for class XIX.

Best ram, two shears and over, J. Spencer, Whitby, $16; 2nd do, G. Miller, Markham, $10; 3rd do, S. Baker, Simcoe, $4.

Best shearling ram, S. Baker, Simcoe, $16; 2nd do, J. Spencer, Whitby, $10; 3rd do, D. Tye, Witmot, $4.

Best ram lamb, D. Tye, Wilmot, $8; 2nd do, S. Baker, Simcoe, $4; 3rd do, D. Tye, Wilmot, $2.

Best two ewes, two shears and over, J. Spencer, Whitby, $16; 2nd do, S. Baker, Simcoe, $12; 3rd do, E. G. O'Brien, Barrie, $6.

Best two two shearling ewes, G. Miller, Markham, imported from Britain, 1861, $24; 2nd do, G. Miller, Markham, $8; 3rd do, J. Spencer, Whitby, $4.

Best two ewe lambs, J. Spencer, Whitby, $6; 2nd do, G. Miller, Markham, $4; 3rd do, W. Brearley, Woodstock, $2.

NOTE.—Mr. Geo. Miller, of Markham, having exhibited some imported Shropshire Down sheep in the above class, as the only one open to them, and it being considered that the classification was not exactly suited to them, a special committee of the Board submitted the following report in reference to them:—

"The undersigned having examined the Shropshire Down sheep exhibited by Mr. George Miller, of Markham, and recently imported by him from England, have great pleasure in bearing testimony to their excellent

qualities for wool and mutton. They are fine animals of the breed, and seem to be well adapted to the country. As there is no class in the premium list for Shropshire Downs, the undersigned recommend that a special premium be given to Mr. Miller.

Signed E. W. Thomson,
D. Christie.

London, 27th Sept., 1861.

CLASS XXI.—FAT SHEEP—(30 Entries)

Judges—Phillip Armstrong, Toronto; Henry Andrews, Kingston; James Vine, Niagara.

Best 2 fat wethers, John Snell, Chinguacousy, $12; 2nd do, Christopher Waugh, London, $8; 3rd do, Samuel Sparling, St. Mary's, $4.

Best 2 fat ewes, F.W. Stone, Guelph, $12; 2nd do, Thomas Smith, Toronto Township, $8; 3rd do, P. Skelly, Paris, $4.

PIGS—LARGE BREEDS.

CLASS XXII.—YORKSHIRES.—(46 Entries.)

Judges—J. N. Diamond, Belleville; Robert Tinling, Waterloo; Wm. Woods, Belleville.

Best, boar, 1 year and over, S. H. Reeve, Toronto Township, $15; 2nd do, P. Kelly, Paris, $10; 3rd do, C. A. Jordison, Belleville, $7.

Best boar under 1 year, C. A. Jordison, Belleville, imported from England, 1861, $30; 2nd do, J. Long, London, $6; 3rd do, T. Kent, London, $4.

Best breeding sow, 1 year and over, T. Kent, London, $10; 2nd do, S. H. Reeve, Toronto Township, $7; 3rd do, C. A. Jordison, $4.

Best sow, under 1 year old, C. A. Jordison, Belleville, $5; 2nd do, J. Main, Peel, $4; 3rd do, D. Cummings, Hyde Park, London, $3.

CLASS XXIII.—LARGE BERKSHIRES.—(11 Entries.)

Judges—The same as for Class XXII.

Best boar 1 year and over, J. Collins, Mt. Elgin, $15; 2nd do, S. Baker, Simcoe, $10.

Best boar under 1 year, C. A. Jordison, Belleville, imported from United States, 1861, $20; 2nd do, S. Baker, $6; 3rd do, A. Gerrie, Dundas, $4.

Best breeding sow 1 year and over, S. Baker, Simcoe, $10.

Best sow under 1 year old, C. A. Jordison, Belleville, imported from United States, 1861, $7 50; 2nd do, S. Baker, Simcoe, $4; 3rd do, do, do, $3.

CLASS XXIV.—ALL OTHER LARGE BREEDS.—(43 Entries.)

Judges—The same as for Classas XXII and XXIII.

Best Boar, 1 year and over, John Black, St. Thomas. $15; 2nd do, W. C. Smith, Strathroy, $10; 3rd do, James Crocker, London, $6.

Best boar, under 1 year old, J. Barnes, St. Thomas, imported from United States, 1861, $20; 2nd do, J. Brady, St. Thomas, $6; 3rd do, Henry Mann, St. Thomas, $4.

Best breeding sow, 1 year and over, G. Miller, Markham, imported from England, 1861, $20; 2nd do, L. G. Shipley, Williams, $7; 3rd do, J. Barnes, St. Thomas, $4.

Best sow, under 1 year old, G. Millar, Markham, imported from England, 1861, $10; 2nd do, J. Brady, St. Thomas, $4; 3rd do, H. Mann, St. Thomas, $3.

SMALL BREED PIGS.

CLASS XXV.—SUFFOLKS.—(62 Entries.)

Judges—Captain Tyrwhitt, Bradford; John Cullis, Cobourg.

Best boar, 1 year and over, George Savage, Summersville, $15; 2nd do, Jas. Main, Chinguacousy, $10; 3rd do, John McGlashan, Pelham, $6.

Best boar, under 1 year, Jas. Main, Chinguacousy, $10; 2nd do, E. Arkland, Whitby, $6; 3rd do, John McGlashan, Pelham, $4.

Best breeding sow, 1 year and over, Peter Mettler, jun., Pelham, $10; 2nd do, John E. Couse, St. Thomas, $7; 3rd do, W. H. Whitehead, London, $4.

Best sow, under 1 year old, James Main, Chinguacousy, $5; 2nd do, Robert Routledge, London. $4; 3rd do, David Cummings, London, $3.

CLASS XXVI.—BERKSHIRES.—(43 Entries.)

Judges—The same as for class XXV.

Best boar, 1 year and over, Thos. Penton, Paris, $15; 2nd do, James Spears, London, $10; 3rd do, David Buchan, Paris, $6. EXTRA.—Equal to first, having been overlooked on first inspection, John Corrie, Culloden, $10.

Best boar, under 1 year, David Buchan, Paris, $10; 2nd do, Thomas Penton, Paris, $6; 3rd do, John A. Penton, Paris, $4.

Best breeding sow 1 year and over, Thos. Penton, Paris, $10; 2nd do, E. W. Thom-

son, York Township, $7; 3rd do, F. Fauquier, Zorra, $4.

Best sow, under 1 year old, Thomas Penton, Paris, $5; 2nd do, David Buchan, Paris, $4; 3rd do, John A. Penton, Paris, $3.

CLASS XXVII.—ALL OTHER SMALL BREEDS.—(52 Entries.)

Judges—The same as for Classes XXV and XXVI.

Best boar, 1 year and over, Alex. Beaton, Aldborough, $15; 2nd do, Jas Cowan, Galt, $10; 3rd do, W. O. M. King, London, $6.

Best breeding sow, 1 year and over, Wm. Weldon, St. Thomas, $10; 2nd do, Daniel Tye, Wilmot, $7; 3rd do, W. T. Moore & Son, St. Thomas, $4.

Best boar, under 1 year, Jas. Cowan, Galt, $10; 2nd do, Daniel Tye, Wilmot, $6; 3rd do, do, do, $4.

Best sow, under 1 year old, D. Cummings, London, $5; 2nd do, Wm. Weldon, St. Thomas, $4; 3rd do, James Cowan, Galt, $3.

NOTE BY JUDGES.—These pigs have been placed in pens at different points, so that we have much greater difficulty in deciding as we could wish, than if they were put in pens near together, and we have the same remark to make in regard to the other classes.

CLASS.—POULTRY, &C.—(294 Entries.)

Judges—J. G. Horne, Toronto; Joseph C. Small, London; Wm. Grey, Woodstock.

Best pair of white dorkings, John Bogue, London, $4; 2nd do, Joseph Lamb, London, $2.

Best pair of spangled dorkings, S. Peters, London, $4; 2nd do, George Durand, Toronto, $2.

Best pair of black Polands, Joseph Lamb, London, $4; 2nd do, F. Fauquier, Zorra, $2.

Best pair of white Polands, Joseph Lamb, London, $4.

Best pair of golden Polands, Joseph Lamb, London, $4; 2nd do, C. C. Coombs, London, $2.

Best pair of game fowls, S. Peters, sen., London, $4; 2nd do, William Calder, London, $2.

Best pair of Jersey blues, S. Peters, London, $4; 2nd do, W. H. Essery, Arva, $2.

Best pair of Cochin China, Shanghai, Canton, or Bramah Pootra fowls, Mark Dyer, London, $4; 2nd do, do, do, $2.

Best pair of black Spanish fowls, S. Peters, sen., London, $4; 2nd do, do, do, $2.

Best pair of black Java fowls, John Bogue, London, $4.

Best pair Bolton grays, Joseph Lamb, London, $4; 2nd do, Sam. Peters, sen., London, $2.

Best pair of Hamburg fowls, W. O. M. King, London, $4; 2nd do, do, do, $2.

Best pair of smooth-legged bantams, Jos. Lamb, London, $2; 2nd do, Jas. McCarthy, St. Thomas, $1.

Best pair of turkeys (white or colored), James McCarthy, St. Thomas, $4; 2nd do, Alex. Gerrie, Dundas, $2.

Best pair of wild turkeys, John Bogue, London, $4; 2nd do, M. Wilson, London, $2.

Best pair of large geese, John Bogue, London, $4; 2nd do, N. T. Bethell, St. Catherines, $2.

Best pair Bremen geese, Jos. Lamb, London, $4; 2nd do, do, do, $2.

Best pair of Chinese geese, Joseph Lamb, London, $4; 2nd do, Jas. Cowan, Galt, $2.

Best pair of Muscovy ducks, Alex. Cameron, London, $4; 2nd do, Jos. Lamb, London, $2.

Best pair common ducks, Jos. Lamb, London, $4; 2nd do, John Bogue, London, $2.

Best pair of Aylesbury ducks, Sam. Peters, sen., London, $4; 2nd do, do, do, $2.

Best pair of Poland ducks, Joseph Lamb, London, $4; 2nd do, do, do, $2.

Best pair of Rouen ducks, Samuel Peters, sen., London, $4; 2nd do, do, do, $2.

Best pair of Guinea fowls, John N. Hunt, Talbotville, $4; 2nd do, Samuel Tye, Stanley, $2.

Best pair of pea fowls, S. M. Frazer, London, $4; 2nd do, W. H. Essery, Arva, $2.

Best collection of pigeons, Henry Imlach, London, $4; 2nd do, Wm. Calder, London, $2.

Best lot of poultry, in one pen, and owned by exhibitor, John Bogue, London, $6.

Best collection of poultry entered in the various classes by one exhibitor, Jos. Lamb, London, $8.

THE FERGUS MEDALS.

Best pair (Cock and Hen) of Domestic Fowls, any breed, prize by Hon. Adam Fergusson, silver medal; 2nd do, Henry Imlack, London, silver medal.

REMARKS OF JUDGES.—The exhibition is better in the class of poultry than on previous occasions, and the judges had great difficulty in awarding the premiums, in consequence not

only of many of the birds being of nearly equal merit, but also that the different specimens of a class were not placed together, and the judges being obliged to run from one end of the building to the other in order to compare the scattered birds, could scarcely perform their duties satisfactorily.

XXIX.—FOREIGN STOCK.—(7 Entries.)

Judges—E. W. Thomson, Toronto; George Buckland, Toronto.

Best stallion for agricultural purposes, Stephen Powell, Lewiston, N. Y., diploma and $12.

Best Merino or Saxon ram, L. W. Worster, Cornwall, Vermont, Diploma and $6; 2nd do, do, do, $6.

AGRICULTURAL PRODUCTIONS.

CLASS XXX.—GRAINS, SEED, &C.—445 Entries.

Judges—Joseph Harris, Rochester, N Y.; E. A. McNaughton, Newcastle; R. Moderwell, Stratford; John Callis, Lindsay; Edward Musson, Etobicoke.

For the best 25 bushels of fall wheat, the produce of Canada West, being the growth of 1861, Canada Company's prize, H. J. Brown, Niagara, $100; 2nd do, by the Association, Thomas Vicars, Orono, $40; 3rd do, T. T. Turnbull, Glenmorris, $20.

Best 2 bushels of winter wheat, John Cullis Cambourne, $10; 2nd do, Thomas Vicars, Orono, $8; 3rd do, Chas. Pope, Woodstock, $6; 5th do, Henry Wright, Amherstburgh, $4.

Best 2 bushels of spring wheat, T. McEvers, Cambourne, $10; 2nd do, I. H. Anderson, Flamboro', $8; 3rd do, Wm. Beatty, Westminster, $6; 4th do, Hugh McIntyre, Lobo, $4.

Best 2 bushels of barley, (two-rowed) I. H. Anderson, Flamboro', $6; 2nd do, A. Gerrie, Dundas, $4; 3rd do, J. Gouinlock, Caradoc, $2.

Best 2 bushels of barley, (6 rowed,) Chas. Kennedy, London, $6; 2nd do, Hugh Kennedy, Burr, $4; 3rd do, S. M. Frazer, London, $2; 4th do, Thos. Allen, Whitby, volume Transactions.

Second prize 2 bushels of rye, Richard Frank, London, $4, 3rd do, R. L. Denison, Toronto, $2; 4th do, John Waddell, Sarnia, volume Transactions.

Best 2 bushels of oats, (white,) A. Gerrie, Dundas, $6; 2nd do, I. H. Anderson, Flamboro, $4; 3rd do, Edward Baker, Delaware, $2; 4th do, Donald Clarke, Embro, volume Transactions.

Best 2 bushels of oats, (black), A. Hetherington, Arva, $6; 2nd do, Alex. Gerrie, Dundas, $4; 3rd do, W. Tolton, Eramosa, $2; 4th do, J. Wilson, London, volume Transactions.

Best two bushels of field peas, J. Storey, Whitby, $6; 2nd do, T. Davis, Etobicoke, $4; 3rd do, Wm. Shepherd, St. Thomas, $2; 4th do, Richard Frank, London, vol. Transactions.

Best 2 bushels of marrow-fat peas, George Lothian, Delaware, $6; 2nd do, J. Long, London, $4; 3rd do, W. Martin, London, $2; 4th do, Mark Dyer, London, volume Transactions.

Best 2 bushels of tares, W. Lea, Toronto, $6; 2nd do, George Savage, Toronto Township, $4.

Best 2 bushels of white field beans, Wm. Bissell, Westminster, $6; 2nd do, Thomas Fleming, London, $4; 3rd do, G. J. Miller, Niagara, $2; 4th do, Wm. Shepherd, St. Thomas, volume Transactions.

Best 2 bushels Indian corn, in the ear, (white,) G. L. Miller, Niagara, $6; 2nd do, J. R. Petit, Grimsby, $4; 3rd do, M. C. Nickerson, Port Dover, $2; 4th do, Levi Foster, Amherstburgh, vol. Transactions.

Best 2 bushels of Indian corn, (yellow,) J. R Pettit, Grimsby, $6; 2nd do, Robert Warren, Niagara, $4; 3rd do, G. J. Miller, Niagara, $2; 4th do, G. W. Boggs, St. Thomas, vol. Transactions.

Best bushel of Timothy seed, Joseph Nixon, London, $6; 2nd do, Wm. Tolton, Eramosa, $4; 2rd do, Edward Baker, Delaware, $2; 4th do, David Wilson, Chatham, vol. Transactions.

Best bushel of clover seed, Samson Baker, Simcoe, $6.

Best half bushel Alsike clover seed, R. Stephens, London, $6.

Best bushel hemp seed, H. Girouard, Hamilton, $6.

Best bushel flax seed, R. Frazer, London, $6; 2nd do, W. Benham, Guelph, $4; 3rd do, G. Patrick, London, $2.

Best bushel mustard seed, J. Dickson, Orono, $6.

Best Swedish turnip seed, from transplanted bulbs, not less than 20 lbs., J. Wilson, London, $6; 2nd do, W. Murray, London, $4; 8rd do, N. T. Bethel, St. Catherines, $2.

Best 14 lbs field carrot seed, W. Bissell, London, $6; 2nd do, D. Falconer, Fullerton, $4; 3rd do, H. Girouard, Hamilton, $2.

Best 12 lbs. mangel wurzel seed, L. Simpson, Talbotville, $6; 2nd do, D. Falconer, Fullerton, $4; 3rd do, G. G. Ward, Cashmere $3.

Best bale of hops, not less than 112 lbs. J. Stevenson, London Township, $20; 2nd do, J. Russell, London Township, 12; 3rd do, R. Reid, London Township, $8.

Best bushel buckwheat, J. N. Hunt, Talbotville, $4; 2nd do, W. F. Smith, Lambeth, $2; 3rd do, J. E. Couse, St. Thomas, vol. Transactions.

Best bushel Miller. A. G. Deadman, Delaware, $4; 2nd do, J. Haldane, London, $2; 3rd do, Joseph Wheaton, Thorndale, volume Transactions.

Second best bushel Hungarian grass seed, James Haldane, London, $2; 3rd do, J. N. Hunt, London, volume Transactions.

Special Prizes for Fall Wheat from Counties.—Best bushel of Fall wheat contributed by a county agricultural society, the growth of the county in the year 1861, the wheat to be the property of the Board: North Oxford Society, $5; 2nd do, West Durham Society, $4; 3rd do, County of Peel Society, $3; 4th do, County of Kent Society, $2; additional sample, East Elgin Society, $1 50.

Report of Judges.—The Judges in making their Report, would say they were much pleased with the arrangement of the articles in their department, which reflects much credit upon the superintendent, Mr. Fleming.

When we began operations we did experience some little difficulty, by the interference of parties, some of whom were exhibiters, but upon making known this fact to the President of the Board, such arrangements were made that upon the following day we got along with our work without difficulty.

We only refer to this matter in order that it may come under the eyes of exhibiters, and that upon future occasions such arrangements may be made in the different departments, that judges can proceed with their arduous udties without being hampered with the interference of interested parties.

In our department, the actual exhibiters came far short of the number of entries made, in many cases they were not a fourth. The general quality of the articles, with a few exceptions, was very fair; in some of the sections, however, the articles were not what they should have been for such an Exhibition as this. In some cases, therefore, we did not award a first prize, believing the articles were not worthy of holding that place. We also found many articles competing in classes which properly did not belong to them; also some entered in the Extra class, when there was a proper class for them. We do not know whether these were entered this way through ignorance, or otherwise; but in all cases where such entries were found, we took it upon ourselves to classify them aright, so as to come in direct competition with others of the same class.

There is, perhaps, no class in the Exhibition, in which a higher interest is felt, than the one your judges have the honor of being placed upon; the most prominent part of it, however, is that of wheat. There may be several reasons for this; we think, however, that the very liberal gift of the Canada Company, ably seconded by the Association, is the principal feature of its attraction.

Your judges, from past experience, were fully aware of the jealousies existing in the mind of each competitor, as to the merit of his own particular sample; we therefore bestowed a greater share of our time than is usual upon this article, in order that no hasty conclusions might be arrived at. Upon our first inspection, we had but one opinion in our award of the Canada Company's prize, the successful individual being Mr. Anderson, of Flamborough. The subsequent actions of Mr. Anderson excited a suspicion that all was not right; we therefore made a second examination, and upon this occasion we emptied each lot, when we found in the case of Anderson' sample, that for about a third of each bag, at the top, was placed wheat of a very superior description, the remainder of each bag being very inferior. We also found this to be the case in two lots of the two bushels samples, one of which was also Anderson's. In these cases the judges set the samples aside, and changed their awards.

There was but one other case of deception practised, which came under our notice, that being in a sample of tares. The exhibiter, apparently anxious to give them a fine appearance, resorted to the expedient of rubbing them with oil, so as to make them have a glossy appearance; had they been left in their natural condition they might have been awarded a premium.

The judges think it most laudable in an exhibiter to bestow all possible care in having his samples pure and clean, the public thereby being benefited; but, on the other hand, we think no language can be uttered too strongly condemnatory of the baseness of an individual who would descend to practise deception, as in these cases, for the purpose of receiving a paltry sum of money.

Your judges think it a duty owing to the public for their future safety, to prohibit these parties from exhibiting upon any future occasion. We would further suggest to your Board that better facilities for the examination of wheat should be placed at the disposal of the judges. This could be done, by having a hopper with a slide, so that each bag could be emptied therein; by this means every part of the bag could be examined.

All of which we beg to submit.

Signed, E. A. McNaughton, Edw. Musson, John Cullis, R. Moderwell, } *Judges.*

CLASS XXXI.—ROOTS AND OTHER FIELD CROPS—(391 Entries.)

Judges.—John Tilt, Toronto Township; David D. Rogers, Kingston; Trueman McEvers, Haldimand Township; John Beattie, Nichol; John A. Donaldson, Weston.

Best bushel pink-eyed potatoes, John Wheaton London, $3; 2nd do, R. Stephens, London, $2; 3rd do, W.B. Harding, London, $1.

Best bushel cup potatoes, R. Stephens, London, $3; 2nd do, Alex. Gerrie, Dundas, $2; 3rd do, Joseph Wheaton, Thorndale, $1.

Best bushel goldfinders, H. J. Brown, Niagara, $3.

Best bushel white potatoes, A. G. Deadman, Delaware, $3; 2nd do, Horatio Jell, Delaware, $2; 3rd do, D. B. Burch, Lambeth, vol. Transactions.

Best bushel blue potatoes, Patrick Cleary, London, $3; 2nd do, E. McConnell, Gravesend, $2; 3rd do, G. W. Boggs, St. Thomas, volume Transactions.

Best bushel of any other sort, E. W. Thomson, York Township, $3; 2nd do, John Long, London, $2; 3rd do, J. Stephens, London, volume Transactions.

Best bushel Swede turnips, George Murray, London, $3; 2nd do, James Beatty, Lambeth, $2; 3rd do, Henry Johnson, Delaware, $1.

Best bushel of white globe turnips, Alex. Kerr, Westminster, $3; 2nd do, R. Rispin, London, $2; 3rd, Alex. Gerrie, Dundas, vol. Transactions.

Best bushel of Aberdeen yellow townships, R. Stephens, London, $3; 2nd do, Alex. Kerr, Westminster, $2; 3rd do, Alex. Gerrie, Dundas, volume Transactions.

Best 20 roots red carrots, A. W. Taylor, Hamilton, $3; 2nd do. Jno. B. Oullett, Amherstburgh, $2; 3rd do, John Paton, Amherstburgh, $1.

Best 20 roots white or Belgian carrots, Charles Hunt, London, $3; 2nd do, W. Cairncross, London, $2; 3rd do, W. Armstrong, Lambeth, $1.

Best 12 roots mangold wurzel, (long red) John B. Oullett, Amherstburgh, $3; 2nd do, Wm. Walker, London, $2; 3rd do, Wm. Benham, Guelph, $1.

Best 12 roots red globe mangel wurzel Wm. Benham, Guelph, $3; 2nd do, William Walker, London, $2; 3rd do, E. W. Thomson, York Township, vol. Transactions.

Best 12 roots yellow globe mangold wurzel, George Harris, Delaware, $3; 2nd do, Alex. Kerr, Westminster, $2; 3rd do, Wm. Shephard, St. Thomas, $1.

Best 12 roots long yellow mangold wurzel, R. Stephens, London, $3; 2nd do, Wm. Benham, Guelph, $2.

Best 12 roots of khol rabi, George Harris, Delaware, $3; 2nd do, G. J. Miller, Niagara, $2; 3rd do, W. B. Harding, London, $1.

Best 12 roots, of sugar beet, G. W. Boggs, St. Thomas, $3; 2nd do, R. Stephens, London, $2; 3rd do, E. T. Ledyard, London, $1.

Best 20 roots of parsnips, Wm. Benham, Guelph, $3; 2nd do, R. Rispin, London, $2; 3rd do, A. W. Taylor, Hamilton, vol. Transactions.

Best 20 roots of chicory, George Pears, Yorkville, $3.

Best two large squashes for cattle, D. B. Burch, Lambeth, $3; 2nd do, Thomas Fleming, London, $2; 3rd do, G. W. Boggs, St. Thomas, $1.

Best two mammoth field pumpins, M. Kelly, London, $3; 2nd do, D. B. Burch, Lambeth, $2.

Best four common yellow field pumpkins, Joseph Nixon, London, $3; 2nd do, Alex. Kerr, London, $2; 3rd do, Alex. Kerr, Westminster, volume Transactions.

Best 20 lbs. of tobacco leaf, growth of Canada West, Henry Girouard, Hamilton, $3,

Best broom corn brush, 28 lbs. John Gage Bartonville, $3.

Best 112 lbs. of flax, the Canada Company's prize, Alexander & Co., Norval, $24; 2nd do, by the Association, Perine Brothers, Conestoga, $16.

Extra.—John Stephens, London, bushel tancred turnips, $2.

HORTICULTURAL PRODUCTS.

CLASS XXXII.—FRUIT—(406 Entries.)

Judges.—Thomas Briggs, jun., Kingston; S. J. J. Brown, Niagara; John Gray, Toronto.

Best 20 varieties of apples, named [six of each], Chauncey Beadle, St. Catherines, $5; 2nd do, John Gage, Bartonville, $4; 3rd do, Alex. Leslie, London, $3.

Best 12 table apples, named, [Fall sort], A. W. Deadman, Delaware, $3; 2nd do, Alex. Dolson, Chatham, $2; 3rd do, Hugh King, London, $1. Extra.—Geo. Leslie, Toronto, $1.

Best 12 table apples, named, [Winter sort,] A. Bailey, Amherstburgh, $3; 2nd do, H. J. Brown, Niagara, $2; 3rd do, John Dolson, Chatham, $1. Exta.—A. Baty, London, $1; do. Chas. Arnold, Paris, $1.

Best 12 baking apples, named, [Fall], John Freed, Hamilton, $3; 2nd do, George Leslie, Toronto, $2; 3rd do, James Smith, Chatham, $1.

Best 12 baking apples, named, [Winter sort,] John Freed, Hamilton, $3; 2nd do, H. Girouard, Hamilton, $2; 3rd do, A. W. Deadman, Delaware, $1.

Best 20 varieties of pears, named, [three of each.] Chauncey Beadle, St. Catherines, $5; 2nd do, Alex. Leslie, London, $4; 3rd do, Bruce & Murray, Hamilton, $3.

Best 12 table pears, named, [Fall sort] John Freed, Hamilton, $3; 2nd do, Chauncey Beadle, St. Catherines, $2; 3rd do, J. D. Humphreys, Toronto, $1. Extra.—Robt. Warren, Niagara, $1.

Best 12 table pears, named, [Winter sort,] A. G. Deadman, Delaware, $3; 2nd do, J. D. Humphries, Toronto, $2; 3rd do, Alex. Leslie, London, $1.

Best 12 plums, named, [Dessert,] J. D. Humphreys, Toronto, $3; 2nd do, Charles Arnold, Paris, $2; 3rd do, William Benham, Guelph, $1.

Best 12 baking plums, named, W. E. Baldwin, Toronto, $2; 2nd do, Charles Arnold, Paris, $2; 3rd do, do, do, $1.

Best quart of Damsons, [English], M. C. Nickerson, Port Dover, $3; 2nd do, G. W. Miller, Grantham, $2.

Best 12 peaches, grown in open air, named, H. J. Brown, Niagara, $3.

Best 12 quinces, H. J. Brown, Niagara, $2; 2nd do, do, do, $1 50.

Best 3 clusters of golden or white grapes, grown under glass, Charles Arnold, Paris, $4; 2nd do, Thomas C. Kerr, Hamilton, $3; 3rd do, Charles Arnold, Paris, $2.

Best three clusters black grapes, grown under glass, Thos. C. Kerr, Hamilton, $4; 2nd do, Charles Arnold, Paris, $3; 3rd do, do, do, $2.

Best four clusters black grapes, grown in open air, S. Pope, Westminster, $2; 2nd do, W. H. Read, Port Dalhousie, $1 50; $2; 3rd do, T. McMullen, London, $1; do, Extra.—Charles Arnold, Paris, $1.

Best four clusters white grapes, grown in open air, W. H. Read, Port Dalhousie, $2; 2nd do, S. Pope, Westminster, $1 50; 3rd do, Charles Arnold, Paris, $1.

Best and heaviest two clusters grapes, grown under glass, Charles Arnold, Paris, $3; 2nd do, do, do, $2.

Best and heaviest two bunches of grapes, (open air), W. H. Read, Port Dalhousie, $3; 2nd do, S. Pope, Westminster, $2; 3rd do, Charles Arnold, Paris, $1.

Best collection of grapes, grown in open air, two clusters of each sort, W. H. Read, Port Dalhousie, $4; 2nd do, Charles Arnold, Paris, $3; 3rd do, Bruce & Murray, Hamilton, $2.

Best green flesh melon, James Steel, London, $2; 2nd do, J. M. Hirschfelder, Toronto, $1 50; 3rd do, J. D. Humphreys, Toronto, $1.

Best red or scarlet flesh mellon, W. L. Lawrason, London, $2; 2nd do, John Nichol, London, $1 50; 3rd do, R. Rispin, London, $1.

Best water melon, S. Pope, Westminster, $2; 2nd do, do, do, $1 50; 3rd do, W. H. Essery, London, $1.

Best 6 citrons for preserving, R. Rispin, London, $2; 2nd do, A. W. Taylor, Hamilton, $1 50; 3rd do, Alex. Kerr, London, vol. Transactions.

Best display of fruit, the growth of exhibiter, (distinct from other entries) three specimens of each sort, George Leslie, Toronto,

$9; 2nd do, Chauncey Beadle, St. Catherines, $6; 3rd, Charles Arnold, Paris, $3.

Extras in Fruit.—F. Fauquier, Zorra, English filberts, $1; W. H. Essery, Arva, transcendent crab apples, 50c; Sebastian Tryfogel, Shakespeare, prunes, 50c; John Freed, Hamilton, Prince Albert currants, 50c; A. W. Deadman, Delaware, English filberts, $1; M. T. Partridge, London, red currants, 50c; R. Sugden, Nissouri, Siberian crabs, 50c; M. Essery, London, crab apples, 50c; Alex. Leslie, London, collection of crab apples, $1; Ellwanger & Barry, Rochester, N.Y., collection of apples 62 varieties, $8; do, collection of pears, 80 varieties, $8; do Native grapes, 8 varieties, $3, and diploma for very fine display of fruit; do 6 bottles white grape currant wine, Diploma. Bruce & Murray, Hamilton, 12 figs of pot growth, $1; do, 4 clusters of hot house grapes, new variety, $1.

CLASS XXXIII — GARDEN VEGETABLES— 353 Entries.

Judges.—Asa A. Burnham, Cobourg; J. C. Small, Toronto; John Wade, Cobourg.

Best 12 roots of salsify, G. J. Miller, Niagara, $2; 2nd do, M. Kelly, London, $1 50; 3rd do, A. W. Taylor, Hamilton, $1.

Best 3 heads brocoli, R. Bugler, London, $2.

Best 3 heads cauliflower, John Freed, Hamilton, $2; 2nd do, do, do, $1 50; 3rd do, A. W. Taylor, Hamilton. $1.

Best 3 heads of cabbage (summer) M. Kelly, London, $2; 2nd do, J. Steel, London, $1 50; 3rd do, D. Campbell, London, $1.

Best 3 heads of cabbage (winter) David Anderson, London, $2; 2nd do, G. W. Boggs St. Thomas, $1 50; 3rd do, Rispin, London, $1.

Best 4 sorts winter cabbage, including savoys, 1 of each sort, R. Rispin, London, $3; 2nd do, David Anderson, London, $2; 3rd do, D. Campbell, London, $1.

Best 3 heads red cabbage, R. Rispin, London, $2; 2nd do, R. Bugler, London, $1 50; 3rd do, John Pegler, London, $1.

Best 12 carrots for table, long red, W. Benham, Guelph, $2; 2nd do, A. W. Taylor, Hamilton, $1 50; 3rd do, J. Pegler, London, $1.

Best 12 early horn carrots, J. Clanahan, London. $2; 2nd do, A. W. Taylor, Hamilton, $1 50; 3rd do, D. Kempster, London, $1.

Best 12 table parsnips, W. Benham, Guelph, $2; 2nd do, J. Clanahan, London, $1 50; 3rd do, R. Bugler, London, $1.

Best 6 roots of white celery, J. Pegler, London. $2; 2nd do, J. Freed, Hamilton, $1 50; 3rd do, J. Pegler, London, $1.

Best 6 roots of red celery, J. Freed, Hamilton, $2; 2nd do, do, $1 50; 3rd do, D. Falconer, Mitchell, $1.

Best dozen of capsicums (ripe) M. Kelly, London, $2; 2nd do, S. Pope, Westminster, $1 50; 3rd do, A. W. Taylor, Hamilton, $1.

Best collection of capsicums (ripe) six of each sort, A. W. Taylor, Hamilton, $3.

Best 3 egg plants, purple, A. W. Taylor, Hamilton, $2; 2nd do, do. $1 50.

Best 12 tomatoes (red) A. W. Taylor, Hamilton, $2; 2nd do J. D. Humpreys, Toronto, $1 50; 3rd do J. Freed, Hamilton, $1.

Best 12 tomatoes (yellow), R. Rispin, London, $2; 2nd do J. D. Humphreys, Toronto, $1½; 3rd do W. O. M. King, London, $1.

Best assorted collection of tomatoes, 6 each of large sorts, and 12 each of small sorts, J. D. Humphreys, Toronto, $3; 2nd do R. Bugler, London, $2; 3rd do M. Essery, London, $1.

Best 12 blood beets, G. J. Miller, Niagara, $2; 2nd do J. Clanahan, London, $1 50; 3rd do F. Strip, Belmont, $1.

Best peck of white onions, A. W. Taylor, Hamilton, $2; 2nd do T. Brown, London, $1 50.

Best peck of yellow onions, A. W. Taylor, Hamilton, $2; 2nd do R. Rispin, London, $1 50; 3rd do G. Headly, London, $1.

Best peck of Red onions, A. W. Taylor, Hamilton, $2; 2nd do J. Clanahan, London, $1 50; 3rd do R. Bugler, London, $1.

Best 12 white turnips (table) A. W. Taylor, Hamilton, $2; 2nd do R. Rispin, London, $1 50.

Best 12 yellow turnips (table) R. Stephens, London, $2; 2nd do R. Rispin, London, $1 50; 3rd do M. Kelly, London, $1.

Best 12 ears sweet corn, A. W. Taylor, Hamilton, $2; 2nd do M. C. Nickerson, Port Dover, $1 50; 3rd do R. Rispin, London, $1.

Best and greatest variety of potatos, half peck of each sort named, A. W. Taylor, Hamilton, $3; 2nd do J. Pegler, London, $2; 3rd do John Stephens, London, $1

Best 3 squashes (table) R. Bugler, London, $2; 2nd do J. Steel, London, $1 50; 3rd do J. R. Flock, London, $1.

Best and greatest variety of vegetables (distinct from other entries) each kind named, A. W. Taylor, Hamilton, $4; 2nd do R. Bug-

ler, London, $3; 3rd do J. Pegler, London, $2.

Extras in Vegetables.—William Hawes, Lumbeth, English potato onions, 50c; R. Bugler London, white egg plants, 50c; Daniel Falcaner, Fullarton, collection of garden seeds, $1; J. D. Humphreys, Toronto, green peas, 50c.; do Beans, 50c. D. Kempster, London, Strawberry Tomatoes, 50c. J. M. Hirschfelder, Toronto, Asparagus Beans, 50c; do Prussian peas, 50c.; do poor man's potatos, 50c. A. McDougall, London, pop corn, 50c. R. Bugler, London, miniature garden, $2. David Anderson, London, red currants, 50c; do Okra pods, 50c. James Griffin, London, intermediate carrot, 50c.; do Roan parsnips, 50c. E. Paine, Talbotville, potato onions, 50c. M. Essery, London, winter cucumbers, 50c; Thomas McBroom, London, top onions, 50c., do pickling onions, 50c. W. L. Lawrason, London, cucumbers, 50c. H. Girouard, Hamilton, cucumbers, 50c. J. C. Small, Toronto, capsicums, 50c. Bruce and Murray, Hamilton, Dioscorea Batatas, 50c.

Note by Judges.—The judges in closing their report upon the class of vegetables, consider it a very creditable show in the several sections. They would particularly notice a very large collection of potatos of 42 varieties.

Miscellaneous.

Improvement in Horticulture.—It cannot be denied by any one that there has been an immense progress in all departments of Horticulture within the past few years. In fruits we have for the dry, choking summer pears, and the large but tasteless autumn varieties, an endless list of delicious tender, and juicy sorts, any of which would grace the dessert of a king. For grapes instead of the two varieties of a few years since, the Isabella and Catawba, we have a great number of luscious varieties, all superior to those sorts. And so of all kinds of fruits. The Strawberry, Raspberry, Blackberry, rarely known except as wild plants twenty years since, are now cultivated in every garden, and are found quadrupled in size and fruitfulness by the attention of the gardener.

But it is not in fruits alone that we see the evidences of the great advance which has been made. The flower garden bears evidence to a still greater improvement. Any one who can recall the appearance of most gardens of twenty years since, will remember the limited number of varieties of shrubs and flowering plants of those days. The Lilac, the Syringa, the Snowberry, the Althea, with a very few others, composed the shrubberies; herbaceous plants were represented by one or two varieties of Phlox, the Columbine, the Larkspur, the Iris, the Meadow Sweet; of annuals single Balsams and Asters, Cockscombs, Cereopsis, Marigolds, and a few varieties of Pinks, held the places of honor. Now behold the change; the seedsmen's catalogues register the names of hundreds if not of thousands of annuals, and the quality as well as quantity has been greatly improved. No one would recognize in the splendid double German Asters and the Camelia flowered Balsams of the present day, the same plants as the single varieties of a few years ago.

In shrubs we can now show dozens, remarkable for beauty of foliage and flowers, for one of that time. Bedding plants, almost unknown then, are now sold by every florist in thousands and tens of thousands. Every year witnesses the introduction of novelties in every department of floriculture and the improvement of old sorts. Every corner of the earth, no matter how remote, is visited by the enthusiastic amateur or the salaried servants of enterprising nurserymen. No expense is thought too great, no labour too severe to deter men from the pursuit of new plants. Nor are these labours unrewarded. Rich men lavish money on the adornment and enrichment of their green and hot houses and their grounds; the man of moderate means must have his well ordered and well furnished garden, and even the poor man spares a few of his hardly earned pence for the purchase of a few packets of seeds of annuals to beautify the few square feet he calls his own.—*Country Gentleman.*

Flying Fish.—The usual length of this fish is from ten to twelve inches, but at the island of St. Helena I have seen it offered for sale from fifteen to twenty inches long, where it is used, as in the West Indies, for food, and is of very delicate flavor. This species is named the Solitary Flying fish (*Exocetus Solitarius,*) from not being seen in large flocks like the others; and it appears to have other specific differences. When watching these fishes close, as they passed under the stern of the ship, I remarked that the extension of both the pectoral and ventral fins as effected with an audible rustling noise, and only a vibratory motion was perceptible afterwards; nor was there any expansion and contraction of those organs during flight, after the first effort. Had there been any percussion of the pectoral fins, it would have been distinctly visible, owing to the proximity of the fish; indeed, to procure percussion of the fins it would be requisite to have an elaborate muscular apparatus; and as on dissection such is not found, the theory of that action of the fins may be coneidered unsupported by fact.

It was also remarked that the fish, when keeping in a direct line of flight, proceeded for a great distance; but when this was deviated from,

and it turned round, (which action was apparently performed by the tail, not by the pectoral fins) it only proceeded about the length of a yard and dropped into the water. The greatest length of time I have seen them fly has been thirty-two seconds, and their longest flight from 200 to 250 yards. The Flying-fish has a steady flight, resembling that of some birds, but when pursued by enemies or frightened by the passage of the ship through the water, it loses this graceful style of volitation, its flight becomes hurried, irregular and awkward; a kind of scrambling pace, —and it frequently drops into the water and again renews its flight in the same unsteady manner. When a large shoal of them emerged at the same time from the sea, it was perceived that some of them dropped immediately, others passed over a distance of twenty yards and fell, while the rest continued a steady flight of 170 to 200 yards, and passed out of sight. Their long pectoral fins or wings have the rays united by a fine, delicate membrane, flexible and transparent; the color of this membrane varies, and some have the ventral fins so large as to appear, to have four wings.—*Gatherings of a Naturalist in Australasia.*

Dutch Cattle.

Mr. W. W. Chenery, of Belmont, has made another importation of Dutch cattle. We saw them on the 7th as they were removed from the ship Fairfield, at Battery wharf. They consisted of a yearling bull, and four 2-year-old heifers, all in good condition. The passage was short, having occupied only thirty one days from Rotterdam. They are what are called the "best nord Dutch blood." The correspondent adds, "'a solid peasant' was employed to purchase them, and they were carefully selected, of excellent skin and hair, 'and are breake out of hands by offer of money,'" *i. e.*, only obtained by exorbitant prices. In bringing them to the port for importation, "they were not allowed to come in contact with any cattle on the way to the port where they were shipped."—They are large, thrifty-looking animals, the heifers weighing over 900 lbs. apiece after arriving at Mr. C.'s farm, and are, evidently, of the best bred stock of the Dutch cattle. Mr. Chenery remarked, that he regards them as combining all the good qualities of the Ayrshires and the Short-horns. It may now be said of the enterprising proprietor of the "Highland Stock Farm," that "Richard's himself again."

Mr. Chenery took every precaution in this importation, necessary to guard against disease, besides instructing his agent to purchase none but the best blood of the Dutch cattle. He has shown us certificates and declarations from Burgomasters, Magistrates, Secretary of the Dutch Agricultural Society and J. F. W. Korndorffer, first-class Veterinarian of the Kingdom of Holland, all duly signed and sealed, setting forth the fine and sanitary condition of the animals. Not only were the specific animals after minute examination pronounced healthful, but reference is had also in the certificates and declarations, to the present and past condition of the herd where they were selected and whence they came.

"Speaking of the "Dutch Short-horned race" as Mr. Flint in his "Milch cows and Dairy-Farming," calls the Dutch cattle, imported by Mr. Chenery, he says, "It has been bred with special reference to dairy qualities, and is especially adapted to supply the wants of the dairy farmer." Again he says, "Dutch cattle, are, in general, renowned for their dairy qualities; but especially so are the cows of North Holland, which give a large quantity but also a very good quality," [of milk.] It is for these qualities so strongly certified to by Mr. Flint, together with others which Mr. C. enumerates, that commend this breed of cattle to him as being superior to all others in his estimation.—W.—*Boston Cultivator.*

Salt to Save Manure.—A recent issue of the *Gardiners' Chronicle* gives the following as a preservative of the fertilizing elements of manure:—"Lissolve common salt in water, sprinkle the same over your manure heap- and the volatile parts of the ammonia will become fixed salts, from their having united with the muiatic acid of the common salt; and the soda thus liberated from the salt will quickly absorb carbonic acid, forming carbonate of soda; thus you will retain with your manure the ammonia that would otherwise fly away, and you have also a new and most important agent then introduced, viz., the carbonate of soda, which is a powerful solvent of all vegetable fiber."

Editorial Notices, &c.

Lower Canada Agriculturist:

A new and much improved series of this useful publication has just been commenced, under the joint editorship of Mr. Perrault and Dr. Smallwood. It will continue to be the official organ of the Board of Agriculture and Agricultural Societies of Lower Canada; and will, of course, contain matter equally interesting to farmers in either section of the Province. In the "getting up," as well as the subject-matter treated of, the new series is a most decided improvement, and we heartily wish the energetic and talented conductors abundant success. It is published monthly for the Proprietor, J. Perrault, Esq., Montreal, at $1 per annum, to whom all contributions are to be addressed.

The Four Great British Reviews and Blackwood's Magazine:

We continue to receive, as published, through

Mr. Rowsell, of this city, these invaluable periodicals, which have now become an essential to every reading man, whether professional, commercial, or agricultural. They are republished almost simultaneously with their appearance in England, in an extremely cheap and well executed form, by Leonard Scott & Co., 54, Gold Street, New York, from whom Canadian subscribers may obtain them direct, *free of American postage;* or they can be procured periodically through the principal booksellers in the Province. We strongly recommend the circulation of these British periodicals throughout these British Dependencies, not only as works of unequalled excellence in all the varied departments of human knowledge, but especially for the true British spirit which they are so eminently calculated to create and strengthen. No reading man can afford to do without them, and we would call our readers' attention in particular to the advantages which the American publishers offer by a most convenient system of clubbing. We sincerely trust that their enterprise is as remunerative to themselves as it is unquestionably beneficial to the public. A number of each of the Reviews is published quarterly, four numbers, each containing letter-press sufficient to fill an ordinary octavo, constitute two volumes a year. Blackwood's Magazine appears monthly, forming two handsome volumes a year. The whole of these leading journals can now be had for the small sum of $10 per annum, being less than a third of the price in Great Britain!

1.

The London Quarterly (Conservative).

2.

The Edinburgh Review (Whig).

3.

The North British Review (Free Church).

4.

The Westminster Review (Liberal).

5.

Blackwood's Edinburgh Magazine (Tory).

The present critical state of European affairs will render these publications unusually interesting during the forthcoming year. They will occupy a middle ground between the hastily written news items, crude speculations, and flying rumours of the daily journal, and the ponderous tome of the future historian, written after the living interest and excitement of the great political events of the time shall have passed away. It is to these Periodicals that readers must look for the only really intelligible and reliable history of current events, and as such, in addition to their well-established literary, scientific, and theological character, we urge them upon the consideration of the reading public.

EARLY COPIES.

The receipt of *Advance Sheets* from the British publishers gives additional value to these Reprints, inasmuch as they can now be placed in the hands of subscribers about as soon as the original editions.

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This is, confessedly, the most complete work on Agriculture ever published, and in order to give it a wider circulation, the publishers have resolved to reduce the price to Five Dollars for the Two Volumes.

The Prize List.

We publish in this number a portion of the Prize List of the late Provincial Exhibition. As exhibitors are aware, some mistakes unavoidably occur at each exhibition, through error in transcribing the judges' awards, or in placing the tickets. Extra prizes also are

awarded, for which amounts have to be placed, awards are contested, &c., all of which things require a considerable amount of time after the close of the exhibition, and some correspondence, to adjust properly. The Prize List now given may be relied upon as entirely correct.

International Exhibition, London, 1862.

THE Commissioners for Canada at the INTERNATIONAL EXHIBITION of 1862, give notice to all parties desirous of exhibiting Canadian products, whether application has been already made for the exhibition of the same or not, that such articles may be sent in for examination and approval to the following places, at any time between the TENTH DAY of FEBRUARY next, and the undermentioned dates, viz:—

IN CANADA WEST.—London, 18th February; Hamilton, 20th February; Toronto, 22nd February; Kingston, 25th February, and Ottawa, 28th February.

IN CANADA EAST.—Quebec, 14th February; Three Rivers, 18th February; St. Hyacinthe, 22nd February; Sherbrooke, 25th February next; and Montreal, 3rd and 4th March next.

Articles will be received and stored at the Depots of the Grand Trunk Railway Company at London, Toronto, Kingston, Quebec, Point Levi, Sherbrooke and St. Hyacinthe.

The Commisssoners will begin their examinations at 10 o'clock, A. M., of each day named.

Intending exhibitors must deliver the articles for exhibition at the above named places, free of charge. Should they not be approved, the Grand Trunk Railway will return them free of charge, to any depot on their line from which they have been sent.

Parties sending in Grain or Woods are requested to transmit a certificate, stating the species and varieties, and where grown. Woods should be sent of the usual dimensions for commerce, and Her Majesty's Commissioners have expressed a desire that they be shown in planks 4 inches thick, showing the sap on both sides, or in 4 inch scantling, and accompanied, wherever practicable, by twigs with leaves or flowers.

Parties desirous of further information, may apply, concerning Minerals and Specimens of Economic Geology, to Sir W. E. Logan, Montreal; concerning products of the Forests and Waters, to Dr. Tache, Quebec, or Dr. Hurlburt, Hamilton; concerning Agricultural produce, to Hon. L. V. Sicotte, St. Hyacinthe, and Col. Thomson, Toronto; concerning articles of Canadian Manufacture, to Dr. Beatty, Cobourg, or to the Secretary, Montreal, to whom also, communications on all other business of the Commisssion are to be addressed.

R. CHAMBERLIN, Com'r, Secretary.

Montreal, December 12, 1861.

THE INTERNATIONAL EXHIBITION OF 1862.

THE UNITED AGRICULTURAL SOCIETIES OF WENTWORTH and HAMILTON will hold an Exhibition of Wheat at Crann's Hotel in the City of Hamilton, on Saturday the 18th day of January, 1862, with a view of obtaining the best samples to forward to the International Exhibition, London,

Best two bushels			Soule's Winter Wheat		$6
"	"	"	Red Chaff	"	6
"	"	"	Blue Stem	"	6
"	"	"	Golden Drop, Spring		6
"	"	"	Fife	"	6

The Wheat obtaining the prizes to become the property of the Society. Members of either of the Societies may compete.

The wheat to be the property of the exhibiter, and grown in the County in 1861.

Entries will be received by the Secretary until 10 o'clock, a. m., of the day of Show.

WM. A. COOLEY,
Sec., U. S. W. & H.

Ancaster, Nov. 25th, 1861.

FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several *pure Durham bull calves* to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the *well known DUCHESS tribe*, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—Frst come, first served.

Waterdown, Nov. 14, 1861. 4–t.

VETERINARY SURGEON.

ANDREW SMITH, LICENTIATE of the Edinburgh Veterinary College, and, by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces, that he has commenced his profession in Toronto, and for the present, may be consulted either personally or by letter, on diseases of Horses, Cattle, &c., at the office of the Board of Agriculture, corner of King and Simcoe Streets; or at Mr. Bond's Livery Stables, Shepherd Street.

Toronto, Octoner 3, 1861.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the GovernmentHouse. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Secretary.

Toronto, 1861.

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A FEW PURE-BRED SOUTH-DOWN RAMS and Ewe Lambs, from

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MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

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Toronto, Aug, 1861.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES,

FOR UPPER CANADA,

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A LOT of thorough bred ESSEX PIGS,—bred from recently imported 1st prize animals, and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

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The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XIII. TORONTO, DECEMBER 16, 1861. No. 24.

Popular Instruction in Agriculture and the Veterinary Art.

We mentioned in our last that arrangements were being made in this city for a short and popular course of instruction in the various branches of Agricultural and Veterinary Science, *specially adapted to the wants of young men engaged in farming pursuits.* From the subjoined circular addressed to the various Agricultural Societies, it will be seen that the final arrangements have been made. We trust that many young men from different parts of the country will avail themselves of this opportunity of making themselves acquainted with the *principles* on which alone the practice of agriculture can be successfully carried out, and its advancement accelerated. Mr. Smith comes among us with the highest testimonials of character and ability from the Principal of the Edinburgh College, in which he graduated. In fact our Board of Agriculture left in the hands of Professor Dick, to choose a suitable person for Canada, with a view not only to the establishment of a private practice, but also to the initiation of what it is hoped will ultimately become a Canadian Veterinary School. The present attempt, therefore, is simply introductory, and the important objects contemplated by the Board—will, it is hoped, be obtained by degrees. It is so manifestly the interest of every young farmer to become acquainted with the principles of his art; including a general knowledge of the form of diseases, and modes of treatment of the domesticated animals, that in this age of mental activity and industrial progress, a scheme of this nature, faithfully and efficiently carried out, cannot—one would think—fail in securing a large measure of success.

BOARD OF AGRICULTURE FOR UPPER CANADA,

Toronto, December 20th, 1861.

SIR,

I am instructed by the President of the Board, to inform you that arrangements have been made for giving in this city a course of Instruction in the Principles and Practice of Agriculture, and of the Veterinary art.

Mr. Andrew Smith, Licentiate of the Edinburgh Veterinary College, and, by appointment, Veterinary Surgeon to this Board, will give instruction in the Anatomy and Physiology of the Horse, and other farm-animals, including a popular description of the symptoms and treatment of the ordinary diseases to which they are subject.

Professor Buckland, assisted by the Professors of Chemistry, Geology, and Natural History in University College, will give a course of Lectures on the science and practice of Agriculture, specially adapted to the wants of young Canadian farmers.

The course will extend over four weeks; commencing on Wednesday, February 12th, and ending on Thursday, March 13th, and will

comprise 26 lectures on Veterinary subjects, and 72 on those of the greatest nterest in relation to Scientific and Practical Agriculture.

The great object of this course is to afford an opportuity to young and inquiring farmers of becoming acquainted with the *principles* of their important art, and to prepare them for carrying on their studies and observations by themselves. As the course will be entirely free, the only expense which young men will have to incur in attending it will be for board and lodging, which may be readily obtained in the city for about $3 a week.

Any further information relative to the Lectures may be obtained by addressing Professor Buckland, University College, Toronto.

H. C. Thomson,
Secretary.

The Agriculturist for 1862.

Having now brought to a close the volume for 1861, it becomes our pleasing duty to gratefully acknowledge our many obligations both to subscribers and contributors, with the expression of our earnest hope that a similar support will be extended to this journal during 1862. It will continue to be published twice a month, 32 pages each number, for the very small sum of half-a-dollar a year, with a bonus of ten per cent to societies or clubs taking not less than ten copies. The *Agriculturist* thus makes an annual volume, with title page, index, &c, of 768 pages. The main object of this journal is not profit, but *usefulness*. Its conductors regret that circumstances beyond their control have, in two or three instances, during the year, delayed its publication a few days, but they hope to surmount these difficulties entirely in the coming year. Contributions are earnestly requested from all parts of the Province, and it is in contemplation to introduce illustrations in the next volume, and to make it more extensive and complete as a vehicle of agricultural intelligence. Each number will contain a distinct Veterinary Department, which will be under the superintendance of Mr. Andrew Smith, Veterinary Surgeon by appointment to the Board of Agriculture.

Board of Agriculture.

The following named members of the Board of Agriculture retire in Junuary 1862, viz.:—Messrs. E. W. Thomson, Toronto; R.L. Denison, Toronto; Hon. H. Ruttan, Cobourg; Hon. Geo. Alexander, Woodstock. It therefore falls upon the County Agricultural societies at their approaching Annual meetings to elect suitable persons to fill the vacancies thus created. The retiring members are eligible for re-election.

Rearing of Calves.

(Continued from page 683.)

It is very difficult to lay down an exact rule for feeding calves, as far as quantity is concerned, nor can a time be fixed for weaning; the appearance of forwardness in the animals being the best rule to go by. However, as a general mode, supposing the calf to have been dropped in March, I would suggest that "pure mother's milk" should be given for a fortnight, then by degrees an admixture of the oil-cake gruel introduced, and a sufficient drink allowed at each meal, so as to remove all hollowness from the flank. In a few weeks six gallons will be taken by the calf, and when the weather is favourable it should be allowed to run in some well sheltered place where the pasture is sweet. In three months calves have an appetite for grass, and it is then that the process of weaning should be begun. I never use skimmed milk; and I gather from the experience I have had in rearing calves that pure milk and the oilcake gruel is the most profitable mixture for calves. Water gruel hay tea, and linseed jelly, may be all used, and calves weaned on them; but the condition of those fed on the cake gruel and pure milk will bear comparison with the others.

I would have the calves fed with milk and gruel at 6 o'clock in the morning, or as soon after the cows are milked as possible. Then supposing them to have arrived at an age to be allowed to run at pasture, I would defer their being driven out until an hour or so after their first feed, so as to allow the process of digestion to be somewhat advanced, as when healthy calves are turned out they usually run and play about at first, which is by no means desirable immediately after being fed. Again between 5 and 6 o'clock in the evening, I would allow each the same quantity as they had in the morning.

The calf-houses should be well supplied with rock-salt; there can be no second opinion as to its being a natural stimulus to the digestive organs, increasing the appetite and promotig the general health. We are informed by hunters of the attractions produced by salt springs for wild animals; nature, doubtless, prompting them to resort where salt is to be procured to correct the

influences of unwholesome matter. Chalk is frequently used as a preventive to purging, and may, with advantage, be placed where the calves have access to it. It is, besides, an excellent ingredient in all drinks given in diarrhœa or scouring. The tendency to purging is caused by acid, which the alkali mixing with it neutralizes, and so checks disease. The animal suffering from inconvenience is led to seek some corrective or palliative, and, though seeming at times to pick up food unsuited to it, it is in fact having recourse to simples placed within its reach. We observe dogs eating grass, pigs rejoicing in cinders, and cattle regaling themselves on grass with clay adhering to the roots, nay, more, the cow has often been seen to pick up earth and eat it, particularly when any indigestion is present; and in the account of the Wonderful Kintore Ox, given in Mr. Youatt's excellent work on the breeds, management, and diseases of cattle, we find "he had a lump of rock salt in his manger, of which he was particularly fond. A basket of earth also stood by him, of which he occasionally ate a considerable quantity, and which operated as a gentle purgative. The uneasiness caused by commencing decomposition caused him to have recourse to the mould, and the acid being met by the alkali was rendered harmless." I may observe that, for the sake of allowing the corrective of the earth, I object to washing turnips; the small quantity of mould adhering to them being more advantageous than the contrary.

The practice of placing stones in the dewlap I consider an excellent one, and the more the animal is forced or pampered the more necessary it is. I have never had a case of quarter-ill or black-leg, and am disposed to think the exemption from that disease may be chiefly owing to the use of setons. In January or February I usually have them inserted, passing them through the loose skin of the chest, taking care not to place them too low down, which would cause the animal much inconvenience when lying, as great soreness is felt for some days. The hair of a cow's tail twisted to the thickness of the finger, with a wooden button at one end, and a knot at the other, answers the purpose. The seton should be smeared with Venice turpentine, to cause it to act quickly, and drawn from knot to button, or the reverse, daily. Black hellebore is sometimes used as a seton, and it may not be out of place to quote Mr. Youatt's valuable opinions when writing on this subject:—"The use of setons in practice on the diseases of cattle is in a manner limited to the passing of a piece of hair, rope, or of black hellebore root through the dewlap; and as exciting inflammation in the neighbourhood of the diseased part, and thus lessening the original one, and causing a determination of blood to a greater or less extent to this new seat of irritation, they are useful both in acute and chronic inflammation of the respiratory organs. In young cattle rapidly thriving, and placed in pasture perhaps a little too luxuriant, permanent setons are highly beneficial; they act as a salutary drain, and prevent that accumulation of the circulating fluid which is the usual cause of inflammatory fever and other fatal complaints."

In conclusion, a few hints may be given for the treatment of navel-ill, diarrhœa, hoose or catarrh, and black-quarter, in their incipient changes, although all serious cases involving the necessity of operations or real scientific treatment call for the presence of the veterinary surgeon.

The examination of the navel-string of the newly dropped calf demands the first attention of the herdsman, who should not be satisfied if it present too raw an appearance, or blood be dropping from it. Mr. Youatt advises "a ligature should be passed close round it, but, if it can be avoided, not close to the belly. Possibly the spot at which the division of the cord took place may be more than usually sore. A pledget of tow, well wetted with friar's balsam, should be placed over it, confined with a bandage, and changed morning and night; but *caustic applications that are so frequently resorted to should be avoided.* Fomentation in the part, in order to disperse the tumour, the opening of it with a lancet if it evidently *points*, and the administration of two or three ounce doses of castor oil, made into an emulsion by means of an egg, will constitute the first treatment; but if, when the inflammation abates, extreme weakness should come on, as is too often the case, gentian and laudanum, with, perhaps, a small quantity of port wine, should be administered."

Next, *Scouring*.—So long as we observe the calf to be lively and playful, taking its milk freely, we need not be alarmed by thin evacuations. Most practitioners recommend a mild purgative in the first instance to remove the acidity and irritation of the bowels, after which the simple doses of from ½ oz. to ¾ oz. of tincture of rhubarb with an equal quantity of water.

Calves well housed until at least two months old, and not put to grass at too early an age, are seldom liable to scour which can cause any uneasiness. My custom, on an appearance of laxness, is to reduce the allowance of milk and keep the calf warm and quiet. An astringent drink of starch 2 ozs, 1 drachm of laudanum, 1½ drachm of ginger, is also recommended.—Should it assume a threatening appearance, or the evacuations be white and tinged with blood, 5 grains of sulphate of copper and two of opium, given four times a day, will be found an excellent remedy.

Mr. Francis Clater treats this disease very simply, and his valuable book, "Every Man his own Cattle Doctor," is much prized, and should be in the hands of all stock-masters, as it is written in a style quite free from pedantry and professional technicalities.

I have found the acrid nature of the fæces to

cause great irritation and uneasiness about the anus; this is greatly relieved by sponging with warm water and keeping the parts clean; too much care cannot be taken, after a cure has been made, so to regulate the diet as to guard against a new attack.

Hoose or Catarrh.—This disease, to which calves are very liable, is most dangerous when neglected, and runs its course with them even quicker than with grown cattle; it also suggests a special reason for vigilance, because it occasionally becomes an epidemic. It is very prevalent in early spring and in the "fall," owing, doubtless, to the extremes of temperature experienced at those seasons of the year. Even temperature in the houses, proper ventilation, nourishing food, and a fair share of it, are the best preventives; whereas, where there is cold, wet, and insufficiency of provender, the disease is almost sure to be present. The first time the herdsman hears a beast cough he should stop and examine it closely; the neglect may prove fatal to the animal affected. Mr. Youatt's advice cannot be too often repeated: "There is no disease of a chronic nature by which cattle are so seriously injured, or which is eventually so fatal to them, as hoose; yet not one herdsman in twenty, and very few of those whose interest is more at stake, pay the slightest attention to it. The cow may cough on from week to week, and no one takes notice of it, until the quantity of milk is seriously decreasing, she is rapidly losing flesh, and then medical treatment is generally unavailing. The disease has now reached the chest, the lungs are seriously affected, and the foundation is laid for confirmed consumption." And, again, how plainly and simply does he point out the means of ascertaining the exact condition of the animal, so that proper measures may be adopted for its relief. "Let her be taken up and examined. Does she feed as well as ever? Does the dew stand upon her muzzle? Are her flanks perfectly quiet? Then one or two nights' housing and a mash or two, or a dose of physic, may set all right. But if, on examination, the muzzle is a little dry, and the root of the horn hot, and she heaves (although not much) at the flanks, and the coat is not to sleek as usual, and she is a little off her feed, let her be bled. Experience will teach the farmer that these chest affections in cattle often and speedily assume a highly inflammable character, and that they must be conquered at first or not at all."

I have often found in the first stage of common catarrh or cold a little nitre given at night in bran mash have an excellent effect. This nitre, or nitrate of potash, is very useful and effective in allaying inflammatory symptoms; it acts mildly on the kidneys. Two drachms in a little bran would be suffinient for an ordinary calf. It will be found to act on the skin, opening the pores, and inducing perspiration. So, while an animal is under its influence, great care must be taken to guard against sudden chills, and, by careful housing to assist the medicine in its operation. If the cough should not yield to a few doses of this simple kind, we must add tartar emetic and digitalis, both most valuable medicines where fever is present. A most severe case of inflammation in a heifer of mine, was a short time since most successfully combated by the administration of frequent but small doses of these medicines, without having recourse to bleeding.

There are few things so annoying to cattle as lice By their attacks the skin is kept in such a state of irritation that the animal can neither feed nor rest in peace, and it is impossible to expect improvement and thrift, while these pests remain in the hair. A thoroughly healthy beast will seldom be infested with lice unless near cattle that are so affected. A good state of health seems to repel, as much as the poverty stricken beast would attract them. Unless checked they increase very rapidly, and whoever it was who said "they are grandfathers in twenty-four hours after their birth" seemed to have formed a tolerably correct opinion of their powers of increase. Powders may be recommended for their destruction, but an oleaginous application will be found the surest. Mercurial ointment would destroy them at once, but I hesitate to advise its use, fearing salivation. Strong tobacco water, or sheep-dressing, will doubtless cause much relief, but I question whether they will be as effectual as train or linseed oil. After its application, and when the lice are found dead in the hair, a washing of soap and water will serve much to cleanse the skin from scurf and irritation, and prove very agreeable to the animal.

Quarter-ill, Black-quarter, Joint-murrain, &c.—No disease has so many names. This may be accounted for from the variety of the symptoms which present themselves. Inflammatory fever would better describe the malady.

It is not the calf alone that is liable to its dread attacks; cattle of all ages may be smitten with it, and it is more frequently present where there is high condition and much thrift. So sudden are its visitations, that we may to-day see a beast drooping and quite amiss that was thought in perfect health yesterday. The heated breath, heavy flank, dry muzzle, quick pulse, and anxious looks indicates the fever that rages within. The animal objects to move about, and when the posture is changed the gait is unsteady, principally in the hind quarters; there is also peculiar moaning; and laborious breathing. The uneasiness increases, he is constantly up and down, at last seems unconscious of surrounding objects. His efforts to rise prove abortive, the symptoms get worse, and the beast dies.—The worst signs are a tenderness in the back and loins, with swelling in these parts, and yielding to the least touch; then we must fear that decomposition has begun; one of the limbs becomes swollen, feels inflamed and tender, and

shows no elasticity on being pressed by the finger: it is in fact, in a state of mortification. Ulcers may appear in different parts of the body, particularly in the mouth, and the urine is discoloured, being darker and perhaps bloody. To treat this disease, in the first place the animal must be housed, and (much as I object to it in the general treatment of cattle) bleeding must be resorted to; purging with Epsom salts should follow: if one dose does not operate it must be repeated. The beast should be most closely watched during this treatment, the least change being carefully noted by the attendant. If there is improvement, doses of digitalis, tartar emetic, and nitre should be administered three times a day. Any swellings of the joints should be well fomented with hot water, and rubbed with equal parts of camphorated spirits of wine, spirits of hartshorn and turpentine. Chloride of lime is a most valuable disinfectant, and it would be wise to wash all ulcers that may appear with a solution of it several times in the day; it will serve in a great measure to prevent the bad smell which always arises from the ulcers. A solution of chloride of lime of a quarter of an ounce in weight may be mixed with a pint of water, and will form a most valuable disinfectant lotion.

"Prevention is better than cure," and I am disposed to attribute my immunity from loss by quarter-ill to proper attention to feeding and housing, and also to the use of the seton, which is my practice to insert in the calf's dewlap towards the end of January. The oil-cake, which I strongly commend, causes the bowels to be kept in a regular state.

Before I conclude I must impress on young farmers the great advantage of having their stock-houses properly constructed, so that there should be no lack of light or fresh air: both are essential to the well-being of calves I am rather an advocate for the light being admitted from the roof, or at all events sufficiently high to prevent the animals standing "at gaze," and, by much watching, becoming unsettled and unthrifty. The houses should be kept scrupulously clean, no accumulation of dung or wet litter allowed to remain, and the floors thoroughly swept before fresh straw if supplied. I find wood answers admirably as a floor; it is more easily kept clean than ordinary pavement. If good paving stones are scarce, the thinnings from young plantations, cut into blocks about ten inches long, and placed vertically on a bed of sand, will make a good substitute. I prefer the wood to the stone, and both to flagging, which is at times dangerous, owing to the smoothness its surface presents from wear and wet.

While animals are feeding, their houses should be cleaned rather than at any other time, and then also their coats should be brushed, as they will like to lie down and rest when their food is disposed of. The gases arising from decomposed vegetable matter are injurious to cattle; and if so to adults, must they not be much more so to animals of tender age? In severe weather warmth, and at the same time proper ventilation, should be provided: the importance of these requisites cannot be overrated.

In conclusion, I may remark that I have treated of the rearing of calves with the aim of turning them into money with all convenient speed, whether in the shape of well-bred cows for breeding and the dairy, or of fine steers ready for the slaughter-house. Of veal calves I have said nothing, not considering that they come within the limits of an "Essay on rearing calves." They are not in fact, *reared*, as it takes but a very short period of time to prepare them for their purpose. It behoves the rearer of calves to "look sharp;" for mortality amongst them tells fearfully against their pockets. The death of one or two or in the year, and even delicacy and the absence of thrift, would swallow up a considerable amount of any profit a breeder (on an average scale) might reasonably expect from his young stock, because he must always allow a margin for casualties in the byre previous to birth ("there is many a slip between the cup and the lip,") and the would-be rearer is often disappointed by cows aborting, or unfortunately producing dead calves, events over which he cannot have much control; to which, however, I am disposed to think high feeding largely conduces. When he has his calves safe and sound, I do not feel that I presume too much when I say that by strictly following the advice which experience has enabled me to give with confidence in the foregoing pages, he may look for a fair share of success in his certainly somewhat arduous undertaking. "It is not in mortals to *command* success." Let us, however, endeavour to deserve it.—MAJOR S. M'CLINTOCK, *in Journal of Royal Agricultural Society of England.*

Agricultural Intelligence.

Progress of Agriculture in France.

In a notice of the Rural Economy of France, by M. Leonce de Lavergne, the "Edinburgh Review" gives an interesting review of French agriculture. On a level with England a century ago, although its progress has been slow, it has latterly become remarkable, and that which in our own case is history, we see now in actual accomplishment among our neighbors. The following picture of French circumstances is interesting:

"Since 1815 her foreign trade has quintupled, her manufactures have quadrupled, her agriculture has doubled its produce, under the influence of those three great principles of peace, justice and freedom, which are the eternal counterpoise of the hateful effects of war, violence and des-

pot.sm. Eighty thousand miles of roads have been opened in the country; 10,000 miles of railway have been completed, or are now in progress; canals have been made, rivers rendered navagable, ports and docks constructed. The progress of rural economy, especially from 1815 to 1847, kept peace with this great movement, and has not been sensibly thrown back by the unfavourable and extraordinary courses of the last few years, in spite of bad seasons, the potato disease, the vine disease, the mortality of the silk worm, and the disturbed state of the political world. The tenure of land has of course been modified to a considerable extent by the laws of succession established in France, but this change is less rapid and complete than is commonly imagined in England. Taking the iarea of France at 45,000,000 of hectares, M. de Lavergne computes that one-third of the soil is still held by 50,000 large proprietors, possessing an average of 750 acres, another third by 500,000 middling proprietors, possessing an average of 75 acres; the last third by 5,000,000 of small proprietors, possessing an average of 7 acres. This calculation is obviously merely approximative; but it is certain that there are in France 16,000 land owners paying £40 a year and upwards in land tax to the State, and about 37,000 land owners paying £20 to £40.

"In the allotment of the soil it seems that since 1789 about 5,000,000 of acres have been added to the productive area of the country; vineyards and orchards and meadows have considerably increased; woods have diminished. In tillage cultivation the fallows have decreased by one half; the growth of wheat, barley and oats has increased a third: that of rye and the inferior kinds of grain has diminished. Water meadows have tripled in extent, and the cultivation of roots, which was hardly known in 1789, now covers 5,000,000 of acres. But the quality of the crops has risen even more than their extent. The quantity of wheat actually grown has nearly doubled; live stock has also doubled in number and value; the silk crop and the rape oil crop have quintupled. The production of home grown sugar has come into existence, and the growth of wine has also doubled. From these facts M. de Lavergne concludes that the total value of the agricultural produce of the empire must now exceed £200,000,000 sterling, or at the rate of about £6 per head of the population. He also infers that rents have risen since 1789 in the proportion of 12 to 30; farmer's profits in the proportion of 5 to 10; outlay in that of 1 to 5; taxes on land and dues have diminished in the proportion of 7 to 5; and labourer's wages have doubled."

The £200,000,000, at which the annual value of French agricultural products is now estimated, is £75,000,000, or 90 per cent. over the estimated annual value of the same interest 50 years ago; and even our own agriculture, we presume, can hardly exceed so rapid a movement as that. We quote the following local pictures and particulars.

"Large fortunes have at all times been made by agriculture in the neighborhood of Paris, but more especially in the last half century. Some of the farmers have their million of francs, many more their £20,000 or £30,000. Farming is here an art, employing large capitals and returning large profits, especially in that district called France *par excellence*, because it formed part of the original domain of Hugh Capet. Large estates are here also less divided. More than 3,000 of the rural assessments exceed 1,000*f.*, and there are many land owners having from £2,000 to £4,000 a year.—*London Ag. Gazette.*

Short-horn Intelligence.—We stated a week or two ago that Mr. S. E. Bolden had sold a bull calf for 500 guineas. The animal, we may now add, was about 14 days old when thus disposed of; the adventurous buyer was Mr. Thomas Atherton, of Speke, near Liverpool; and the young patrician (as appears from a comparison of his weight with his cost) fetched something about five shillings an ounce, or eighty shillings a pound. This is an unprecedented event in the annals of short-horn breeding, and is equally significant of courage, speculation and success. Whether a calf not three weeks old is worth 500 guineas, is of course, a question we cannot decide; but it may be said, with truth, in reference to the seller, that an animal is worth what it will bring; and, with equal truth, in reference to the buyer, that the practical value of a prime-bred bull cannot well be estimated. *Bell's Messenger.*

An Italian Cattle Show.

Since the successful career of Garibaldi, and the organization of a Government of their own, the Italians seem to be coming up in all the arts and social institutions which give strength and character to a nation. Among the best evidences of this is the establishment of a National Cattle Show.

The Boston *Cultivator* quotes from the London *Times* an account of this Exhibition, which appears to have been a successful one. It was held in Florence, which gave it rather a Tuscan character, as the cattle were principally from Tuscany, the orher sections of the Kingdom not being in direct railway communication with Florence. A writer present, speaking of the cattle in that part of the world says:

"The color of the genuine Italian breed of cattle is almost uniformly straw-yellow or pearl-white, and nothing can equal their sleekness and cleanliness. Whether this is the effect of their shortness of hair and the peculiar healthines of their skin, or whether the Italian boor takes that pride in the look of his cattle for which he does not show the same care about his own person, is more than I am able to say; but it is a fact that I have often remarked in the Æmilia, and

which I again witnessed here to-day, that oxen and cows in Italy look as thoroughly groomed, as smooth and shining, as English race-horses. All of these huge field-laborers, the cows and the very bulls, have a placid, half-dreamy look, indivative of the very best nature, and of a temper which no provocation would ruffle. I noticed the Archbishop of Pisa's steers, in particular, with the classical profile of their heads, the slightly-arched frontal bone; the meditative, almost clerical gravity of expression, for which, taking their prodigious bulk into account, it was impossible not to feel a certain degree of reverence and kindly affection."

Horticultural.

The Dwarf Pear.

SUMMER PRUNING OR PINCHING.

[Read before the Hamilton Horticultural Club, and concluded from page 331 of the *Agriculturist*.]

Mr. President and Gentlemen,—According to your request at your last meeting, I now bring forward the concluding portion of paper on the Dwarf Pear, that is summer pinching—thinning the fruits, gathering and keeping the fruit &c. Summer pruning or pinching is to go over the trees at stated periods during the growing season, and remove the points of the growing shoots, (this operation is performed by the thumb-nail and fore-finger—*hence, pinching*) with a view to bring a young tree into a proper shape and a bearing state in the earliest possible time, and at the least expense of vegetative powers. When a tree or plant of any description grows with great vigor it has a tendency to grow gross, or watery as we usually term it; and instead of flowers and fruit, the produce (if a fruit tree) is but wood and leaves. This process continues from year to year; in some trees for an almost indefinite period—until the roots have exhausted all the nourishment within their reach, the tree arrives at maturity,—or some accidental occurance take place that will bring it into a bearing state. The scientific fruit cultivator will not require to wait any lengthened period for his tree to produce abundantly: any more than a florist would think of occupying three or four years to grow specimen plants of Geraniums or Fuchsias. In growing either of the above species of plants they are highly fed at the roots and encouraged to grow luxuriantly; but its luxuriance is not allowed to run to water or expand itself in making strong watery shoots, for as soon as the shoot is the required length, its point is pinched off, and instead of one strong shoot, there will spring from the base of each leaf-stalk a shoot—not so strong as the one from which it sprung, but strong enough for the purpose it is designed to serve. A similar process is employed in respect to the Dwarf Pear to bring about similar results. It is encouraged to made vigorous growth, and that growth kept in check by pinching. For some varieties of pears on *Quince stock*, pinching alone will bring a tree early into a bearing state, although it will take a longer time, and the tree will attain a larger size than if root-pruning and summer pruning are combined. About the middle or end of June, (according to the season) the branches will put forth young shoots,—from one, to three or more; select the one most suitable for a leader, pinch off all the others to three leaves from the base of the shoot, *i. e.*, when the young shoots have made four leaves, pinch off the fourth leaf and the point of the shoot, thus leaving three leaves on the shortened shoot. When the leading shoot has made 6 or 7 inches growth that also may be pinched at that distance if the variety be a strong growth, but if weak grown it is better to shorten the leaves to 4 or 5 inches. If the wood mature the pruning knife will be little required at the winter or spring pruning; but if the wood is not perfectly ripened it must be cut into the mature wood, keeping in view the desired shape of the tree. The same operation is repeated annually as long as the tree requires it. A few years will suffice to bring the trees into a bearing state, and then they will make wood but sparingly.

Thinning the Fruit.—Young pear trees not only require the fruit thinned, but would be greatly benefitted were the half of the blossom buds thinned out also. Early in May or just before the buds open, if the tree is thickly covered with fruit-buds one-half may be cut off, and there will still be enough—and to spare for fruit. This will materially assist the shy setting varieties. I confess that I have not practised the thinning of pears to any great extent, seldom having cause to remove a perfectly formed fruit. But when Curculio or any other insect has made an attack so as to deform the fruit, I do not hesitate to thin unsparingly For small varieties, such as the *Seckel, Dearborn's Seedling, Madeleine, &c.*, little thinning is necessary; but for large sorts such as *Napoleon, Beurre Diel*, and some seasons the *Duchesse d' Angouleme*, thinning is absolutely necessary, if size and quality of fruit be the object. Varieties that grow in clusters should be reduced to two, and, except those growing on the same spur, no two fruit ought to touch each other, from 6 to 8 inches apart all ever the tree would be a very good distance, and the nearer approach to that we can come, the nearer to perfection we shall reach, in the cultivation of the Pear.

There are various opinions respecting the gathering of late pears. Some cultivators, and writers on the subject, say that late varieties should hang on the trees as long as there is no danger from severe frosts. But even the

latest varieties of pear may be allowed to hang too long on the tree, and in some cases will not ripen at all. Mr. Rivers in one of his works, says that he allowed some pears to hang on the trees until late in October, and although they were treated similarly to others of their class usually are, they did not ripen, but turned black, and decayed at the core. A variety of late pear (for which I have no name) went the same way last season, got black (although quite firm), and was unfit for use. This season *Steven's Genesee* were allowed to hang on the trees until they appeared ripe (were yellow as a lemon), but they never got fit for use, neither did they soften until decay took place. Pears should always be gathered before tue usual time of ripening, and that process completed in doors. It is difficult to state with any degree of certainty at what time any variety of late or early pear should be gathered, so much depending on the season and locality, that nothing short of practical experience will enable the young cultivator to judge. I have gathered the latest varieties that fruit in this place about the first week in October.

Although writers and cultivators are divided as to the time at which the fruit of the pear ought to be gathered, they all agree as to the mode of gathering it. Choose a day, say, gently raise the fruit, and detach it at the proper place, (so as not to injure the fruit buds on the tree, nor the fruit by pulling the stalk out,) and to handle them as carefully as if they were eggs, for on that principally depends the keeping of the fruit; when there is plenty of time to do it. Pears ought to be gathered from the tree, put into the vessel in which they are to remain until ripe, and carefully carried to the fruit house. It is well not to put a large quantity into any one vessel—not more than one bushel and a half—that quantity is preferable. I have kept some of the larger sorts very well in half flour barrels, i. e., a flour barrel cut in two, with rope handles put in them; by that means they are handy to move about. These with a little hay or straw at bottom, placed in a cool, dry cellar, seem to answer very well. By keeping the fruit in a lower temperature than usual, most varieties have been later in maturing than former years. There are now (Dec. 1st) Beurre Basc, Beurre Diel, Duchesse D'Angouleme, Napoleon,—all of which have matured three or four weeks earlier in former years. In concluding this paper, I may state that I have tried several experiments in keeping late pears; but hitherto they have not been found superior to half barrels or small boxes, and treated as above. So far as my experience goes, pears should be gathered carefully—not too late—put away in a cool room or cellar—have plenty of air, and removed to a higher temperature (60° or 65°) for a few days before using.

CHAS. MESTON.

Veterinary.

DOCKING AND NICKING.—These barbarous methods of depriving the horse of his natural form and appearance, in order to make him conform to the fashion of the time, is, fortunately very fast going into disuse. If the tail of the horse were given him for no good purpose, and if it were not a design of nature that he should have the power of moving it forcibly to his sides, there might be some excuse for cutting it off, within a few inches of his body, or for separating the muscles at its sides to lessen this power but, that this is not the case, must be acknowledged by all who have seen how a horse, whose tail has been abridged by "Docking," or weakened by nicking, is annoyed by flies.

If a horse has a trick of throwing dirt on his rider's clothing, this may be prevented by cutting off the hair of the tail, below the end of the bones, as is the custom with hunters in England, where the hair is cut squarely off about eight or ten inches above the hocks.

No apology is offered for not giving here a description of these two operations; they are so barbarous and so senseless, that they are going very rapidly out of fashion, and it is to be hoped that they will ere long have become obsolete, as has the cropping of the ears, formerly so common in England.

A more humane way of setting up the horse's tail, to give him a more stylish appearance, is by simply weighting it for a few hours each day, in the stall, until it attains the desired elevation. This is done by having two pulleys at the top of the stall, one at each side, through which are passed two ropes which come together and are fastened to the tail, the ropes having at their other end weights, (bags of sand or shot are very good for the purpose) which must be light at first, and may be increased from day to day. The weight should be continued until the tail has taken a permanent position as desired. It is true that this method requires a somewhat longer time than that of cutting the muscles, but while it is being done the horse is never off his work, and he suffers infinitely less pain.

The method of nicking or pricking, as usually performed in this country, is not quite so cruel, nor so hazardous as the cutting of the muscles. —*Herbert's Hint's to Horse-Keepers.*

HORSE SHOES FOR SNOW.—A correspondent of the *American Agriculturist* suggests that the balling of snow on horses' feet may be materially lessened, by making the upper side of the shoes wider than the lower side, so that the inner edge will be bevelling outward. If constructed in this way, the balls of snow would more readily fall out than if held by square-sided shoes. The suggestion is not a new one—at least we have heard of it before, we believe—but it would seem to be valuable, and worthy

the attention of blacksmiths, or those who have horses to be shod. At best, damp snow will pack into the shoe, but if the lower side of the opening be the widest it will be the more likely to drop out.

Transactions.

Prize List, Provincial Exhibition, 1861.

(Continued.)

CLASS XXXIV.—PLANTS AND FLOWERS.—(136 Entries.)

Judges—Messrs. John Wade, Port Hope; Asa A. Burnham, Cobourg; and J. C. Small, Toronto.

Best dozen dahlias, named, George Leslie, Toronto, $2.

Best and largest collection of dahlias, Geo. Leslie, Toronto, $5.

Best bouquet of cut flowers, (for table) J. M. Hirschfelder, Toronto, $2; 2nd do, A. Bugler, London, $1 50.

Best hand bouquet, J. M. Hirschfelder, Toronto, $2; 2nd do, do, $1 50; 3rd do, G. Haigh, London, $1.

Best collection of green-house plants, not less than 12 specimens, in flower, J. Pegler, London, $10; 2nd do, do, $6; 3rd do, J. M. Hirschfelder, Toronto, $4.

Best 12 pansies, J. Westland, Westminster, $2; 2nd do, J. Pegler, London, $1 50; 3rd do, Mrs. Beecher, London, $1.

Best 6 fuchsias, in flower, J. Pegler, London, $3; 2nd do, do, $2; 3rd do, do, $1.

Best collection of annuals in bloom, D. Kempster, London, $2; 2nd do, J. Westland, Westminster, $1 50; 3rd do, J. M. Hirschfelder, Toronto, $1.

Best 6 cockscombs, J. Steel, London, $2; 2nd do, A. Denham, do, $1 50; 3rd do, R. Bugler, do, $1.

Best 6 balsams in bloom, D. Kempster, London, $2; 2nd do, F. Girouard, Hamilton, $1 50; 3rd do, R. Bugler, London, $1.

Best collection of asters, J. Fleming, Toronto, $2; 2nd do, Mrs. Lawrason, London, $1 50; 3rd do, J. Pegler, London, $1.

Best collection of 10 weeks' stock, George Haigh, London, $2; 2nd do, John Pegler, London, $1 50; 3rd do, R. Bugler, do, $1.

Best collection of hybrid perpetual roses, not less than 12 blooms, John Pegler, London, $2; 2nd do, H. Girouard, Hamilton, $1 50.

Best floral ornament or design, T. Partridge, London, $5; 2nd do, J. Steel, London, $4; 3rd do, J. M. Hirschfelder, Toronto, $3.

Best collection of verbenas, not less than 12 varieties, Bruce & Murray, Hamilton, $3; 2nd do, J. M. Hirschfelder, Toronto, $2; 3rd do, J. Pegler, London, $1.

Best 6 petunias, J. Pegler, London, $2; 2nd do, J. M. Hirschfelder, Toronto, $1 50; 3rd do, do, $1.

Best collection perennial phloxes, George Leslie, Toronto, $2; 2nd do, Bruce & Murray, Hamilton, $1 50; 3rd do, J. Pegler, London, $1.

Best 6 hardy shrubs, (spikes in flower) G. Leslie, Toronto, $2; 2nd do, C. Arnold, Paris, $1 50.

Best collection of hollyhocks, Geo. Leslie, Toronto, $2; 2nd do, J. Clanahan, London, $1 50; 3rd do, G. Leslie, Toronto, $1.

Best display of plants in flower, distinct from other entries, J. Pegler, London, $10; 2nd do, J. Fleming, Toronto, $6; 3rd do, J. M. Hirschfelder, Toronto, $4.

Best collection of native plants, dried and named, Miss Kate Crooks, Hamilton, $5; 2nd do, Mrs. C. P. Trail, Otonabee, $3; 3rd do, Thos. Waterhouse, London, $2.

Best specimen of useful and ornamental rustic work for the garden, H. Girouard, Hamilton, $4.

EXTRA PRIZES.—John R. Flock, London, ivy plant, $1. J. M. Hirschfelder, Toronto, 3 foliage plants, $2. James Westland, Westminster, China Pinks, $1. Mrs. T. Partridge, London, zinnias, $1. John Pegler, London, collection cactus and aloes, $5. Geo. Haigh, London, French marigolds, $1; do, do, gladeolus, $1. Mrs. Beecher, London, zinnias, $1. Bruce & Murray, Hamilton, collection of gladeolus, $2; 6 spikes tritonias, $1. Ellwanger & Barry, Rochester, N. Y., collection of natural flowers, $3.

REMARKS BY JUDGES.—The judges in closing their report upon plants and flowers, are much pleased with the exhibition in this department, and have much pleasure in strongly recommending a collection of flowers and fruit sent in by Ellwanger & Barry, of Rochester, N. Y., for a premium and diploma.

CLASS XXXV.—DAIRY PRODUCTS, &c.—(162 Entries.)

Judges—Messrs. Oliver Blake, Simcoe; Sam. Lake, Newburgh; Benjamin Jackson, Haldimand township; and Joseph Ross, York township.

Best firkin of butter, in shipping order, not

less than 56 lbs., T. Shore, London, $12; 2nd do, M. McArthur, Lobo, $10; 3rd do, A. Dolsen, Chatham, $8; 4th do, G. Patrick, London, $6.

Best butter, not less than 28 lbs, in firkins, crocks, or tubs, P. Scott, North Easthope, $8; 2nd do, Mrs. J. Allen, Ingersoll, $6; 3rd do, William Tolton, Eramosa, $4; 4th do, M. McArthur, Lobo, $2.

Best cheese, not less than 30 lbs, H. Ranney, Salford, $10; 2nd do, J. Paton, Amherstburg, $8; 3rd do, J. Harris, Ingersoll, $6; 4th do, H. Ranney, Salford, $4.

Best two stilton cheese, not less than 14lbs. each, H. Ranney, Salford, $10; 2nd do, H. K. Parsons, Guelph, $8; 3rd do, do, $6; 4th do, J. Harris, Ingersoll, $4.

Best honey in the comb, not less than 10 lbs, John McKee, Norwich, $3; 2nd do, H. McKee, Norwich, $2; 3rd do, J. E. Couse, Yarmouth, $1 50; 4th do, C. Robinson, Burford, Transactions.

Best jar of clear honey, G. Miller, Markham, $4; 2nd do, G. G. Ward, Cashmere, $2; 3rd do, H. McKee, Norwich, $1 50; 4th do, Jno. McKee, Norwich, Transactions.

Extra Prizes.—Hiram Ranney, Salford, De eham, 6 pine-apple cheeses, $3. James Harris, Ingersoll, 4 pine-apple cheeses, $2. John P. Fuller, London, hive of bees, $3; do, do, beeswax, $1.

CLASS XXXVI.—AGRICULTURAL IMPLEMENTS, WORKED BY HORSE OR OTHER POWER.—(164 Entries.)

Judges—Alex. Shaw, Toronto; Jacob Bingham, Burford; John Tilt, Toronto township; Nathan Choate, Port Hope.

Best iron plow, Wm. Mahaffy, Brampton, diploma and $12; 2nd do, John Gray, Egmondville, $8; 3rd do, Geo. Morley, Thorold, $4.

Best wooden plow, Wm. Mahaffy, Brampton, diploma and $12; 2nd do, Jas. Walker, Westminster, $8; 3rd do, George Morley, Thorold, $4.

Best subsoil plow, George Morley, Thorold, diploma and $12.

Best double mould plow, George Morley, Thorold, $10; 2nd do, James Walker, Westminster, $6.

Best pair of harrows, H. Johnston, McGillvray $6; 2nd do, Thos. Stacey, St. Thomas, $4; 3rd do, Andrew Boyle, Eden Mills, $2.

Best horse-power thrasher and separator, Ganson Waterous & Co., Brantford, diploma and $20; 2nd do, J. Watson, Ayr, $12; 3rd do, Joseph Hall, Oshawa, $8.

Best grain drill, J. Watson, Ayr, diploma and $12; 2nd do, Maxwell & Connell, Paris, $8; 3rd do, Pavey & White, London, $4.

Best straw cutter, Maxwell & Connell, Paris, $5; 2nd do, Pavey & White, London, $4; 3rd do, Hugh McLaren, Lowville, $3.

Best smut machine, J. Garithore, Dundas, $6.

Best grain cracker, A. Harris, Beamsville, $8.

Best clover cleaning machine, A. Harris, Beamsville, $12; 2nd do, do, $8.

Best cider mill and press, Sampson & Son, St. Catherines, $12; 2nd do, do, $8.

Best two-horse wagon, John Sheriff, Chatham, $12.

Best horse-rake, A. Harris, Beamsville, $4; 2nd do, Murray Anderson, London, $3; 3rd do, John Pacey, London, $2.

Best wooden roller, A. C. Bruce, Glenmorris, $10.

Best stump extracter, J. Thomas, Hamilton, $8; 2nd do, do, do, $4,

Best reaping machine, Bell & Lawrason, St. George, Brant, diploma and $20; 2nd do, Collins, & Co., Guelph, $12; 3rd do, Isaac Modeland, Brampton, $8.

Best mowing machine, J. W. & R. Green, Waterford, $12.

Best combined mower and reaper, Bell & Lawrason, St. George, diploma and $20; 2nd do, Billington & Forsyth, Dundas, $12; 3rd do, McArthur & Co., Plattsville, $8.

Best potato digger, Murray Anderson, London, $3; 2nd do, James Beattie, Lambeth, $2.

Best field or two horse cultivator, Henry Collard, Gananoque, $12; 2nd do, A. C. Bruce, Glenmorriss, $8; 3rd do, W. Alexander, Falkirk, $4.

Best horse-hoe, or single horse cultivator, Pavey & White, London, $4; 2nd do, Orin Avery, Tilsonburgh, $4.

Best improved liquid manure drill, for drilling two or more rows of liquid, with turnips, mangels, &c., either on the ridge or flat, Emanuel Rockey, Union, $25.

Extra Prizes.—Wm. T, Goff, Lambeth, clod-crusher, $2. S. W. Ryckman, Bridgetown, corn sheller, $2. John Elliott, London, gang plow, $2. Robert Robson, London, double shear trench plow, $2. Hugh McLaren, Lowville, combined cultivator and grain drill, $6. J. D. S. Nixon, Ingersoll, drag saw, $2, George Jackson, London, corn sheller, $1. John Thomas, Hamilton,

drill for drilling rock, diploma and $5; do, do, universal joint for running angles without bevel gearing, $2. G. Huntingdon, Norwichville, gang plow and sower combined, $6, James Hamilton, Peterboro, model of combined grain drill and cultivator, $1. Emanuel Rockey, Union, broad cast sower, $4. Robert Robson London, field leveller, $1. E. Leonard, London, boring machine, $2; do, drag saw, $4. James Norman, St. Thomas, model pea-thrasher and separator $2.

CLASS XXXVII.—AGRICULTTRAL TOOLS AND IMPLEMENTS, CHIEFLY FOR HAND USE.—(109 Entries.)

Judges.—Messrs. Stephen Wade, East Elgin; Donald McFarlane, Etobicoke; and John Ker, Drummondville.

Best fanning mill, O. W. Everett, Dundas, diploma and $6; 2nd do, John Adam, Chatham, $4; 3rd do, Stewart & Tapp, London, $2.

Best seed drill or barrow, Wm. Walker, London, $4; 2nd do, do, do, $3; 3rd do, E. Rocky, Union, $2; extra do, E. Rockey, Union, $2.

Best straw cutter, H. McLaren, Lowville, $5; 2nd do, M. Anderson, London, $4; 3rd do, G. White, London, $3.

Best machine for cutting roots for stock, Maxwell & Connell, Paris, $6; 2nd do, J. S. Nixon, Ingersoll, $4; 3rd do, Peter Forsyth, St. Marys, $2.

Best cheese press, G. Huntingdon, Norwichville, $8; 2nd do, Andrew Bowd, Eden Mills, $6.

Best churn, Chas. R. Parkes, Toronto, $3; 2nd do, Silas Walter, Princeton, $2; 2rd do, James Armstrong, Bathurst, $1.

Best thistle extractor, Arch. Frank, Cheltenham, 3rd prize, vol. Transactions.

Best farm gate, M. S. Depew, Paris, $3.

Best specimen of farm fence, of wood, James Gardiner, Cashmere, $3.

Best half-dozen hay rakes, Thos. Bryan, London, $3; 2nd do, do, do, $2; 3rd do, W. Tait & Co., Duart, $1.

Best half-dozen manure forks, A. S. Whiting & Co., Oshawa, $3; 2nd do, do, do, $2; 3rd do, do, do, $1.

Best half dozen hay forks, A. S. Whiting & Co., Oshawa, $3; 2nd do, do, do, $2; 3rd do, do, do, $1.

Best half dozed sythe snaiths, W. Tait & Co., Duart, $3; 2nd do, A. S. Whiting & Co., Oshawa, $2; 3rd do, do, do, $1.

Best ox-yoke and bows, J. Nixon, London, $2; 2nd do, George Nixon, London, $1; 3rd do, John Nixon, London, Trans.

Best grain cradle, Thos, Brian, London, $2; 2nd do, John Lightheart, Acton, $1.

Best half-dozen steel hoes, A. S. Whiting & Co., Oshawa, $3; 2nd do, do, $2; 3rd do, do, $1.

Best half-doxen grass scythes, A. S. Whiting & Co., Oshawa, $3; 2nd do, do, $2; 3rd do, do, $1.

Best half-dozen cradle scythes, A. S. Whiting & Co., Oshawa, $3; 2nd do, do, $2; 3rd do, do, $1.

Best implement for harvesting peas, Murray Anderson, London, 2nd prize, $5.

EXTRA PRIZES.—A. S. Whiting & Co., Oshawa, collection of agricultural and gardening tools, $5. E. Cutler Coldstream, hand weaving loom, $2. David Cutler, Amiens, feeding trough for cattle, 1$; do, do, sheep rack, $1. Thomas Bryan, London. stubble rake, $1. Alanson Harris, Beamsvile, wagon rack, $2; A. Murdock, Newcastle, large hand rake, $1. Robert Kerr, Bridgeport, broadcast grain and seed sower, $2. H. Wyatt, Aurora, model of rotary tooth harrows, $1.

CLASS XXXVIII.—CATTLE FOOD—MANURES, AND MISCELLANEOUS.—(13 Entries.)

Judges—Messrs. Alexander Bartlett, Windsor; and Henry Wright, Amherstburg.

Best specimen ground bones for manure, P. R. Lamb, Toronto, $4, 2nd do, J. Gartshore, Dundas, $2.

Best specimen other artificial manure, Alex. Taylor, York, Grand River, gypsum, $4.

EXTRA.—Alex. Taylor, York, Grand River, specimens of gypsum, unground, $2.

CLASS XXXIX.—FOREIGN AGRICULTURAL IMPLEMENTS.—(17 Entries.)

Judges—Messrs. Alexander Bartlett and Henry Wright.

Horse pitch fork, Stephen Bullock, Bradford Co., Pennsylvania, diploma.

Plough, of English manufacture, H. Chisholm, London, certificate.

Combined reaper and mower of United States manufacture, M. Delong & Co., Belleville, certificate.

Iron plough, of English manufacture, Rich. Gibson, London, certificate.

Combined thrashing and cleaning clover machine, Birdsell & Co., Monroe Co., N. Y., diploma.

A Kirby mowing machine, and combined mower and reaper, Edw. Braman, Buffalo, N. Y., diploma.

Six clocks (calendars), A. Heggie, Ithaca, N. Y., diploma.

Knitting machine, U. S. patent, S. S. Martin, Toronto, diploma.

Artificial leg, Douglas Bly, Rochester, N. Y., diploma.

Scientific churn, D. W. Seely, Auburn, N. Y., diploma.

Remarks of Judges.—The judges in the above class would beg to bring under the notice of the executive committee the following articles as particularly deserving of their attention, viz: No. 1, a horse pitch fork, (Stephen Bullock, Pennsylvania). Nos. 6 and 7, English iron ploughs, (exhibited by R. Gibson, London). No. 8, a clover thrashing and hulling machine, (Birdsell & Co., N. Y.,) being the best on the ground, and of great advantage to the farmer; the judges saw it perform its work with great efficiency. The Kirby mower, (Ed. Braman, Buffalo, N. Y.,) they regard as worthy of a diploma. No. 15, an artificial leg, (Douglas Bly, Rochester, N. Y.,) and No. 4, a knitting machine, (exhibited by S. S. Martin, Toronto,) are both very ingenious, and recommended for diplomas. No. 17, a scientific churn, (D. W. Seely, Auburn, N. Y.) will make butter in two minutes and a half, which the judges had verified by the churning of a quantity of skim milk in that short space of time. All which is respectfully submitted.

DEPARTMENT SECOND.

Arts, Manufactures, Ladies' Work, &c.

CLASS XL.—ARCHITECTURE AND MISCELLANEOUS USEFUL AND DECORATIVE ARTS.—(91 Entries.)

Judges—Messrs. J. Shier, Whitby; G. Bickle, Dundas; and Henry Langley, Toronto.

Best architectural drawing, Matt. Sheard, Toronto, $6.

Best architectural drawing in perspective, Matthew Sheard, Toronto, $6.

Best composition drawing of natural foliage (Canadian), applicable to architectural details, John Moser, Toronto, $7; 2nd do, do, $5.

Best collection of mathematical, philosophical and surveyor's instruments, A. F. Potter, Toronto, $10.

Best specimens stained glass, McCausland & Horwood, Toronto, $6.

Best carving in wood, Phenix Philips, Toronto, $6; 2nd do, James Peterkin, Toronto, $4.

Best carving in stone, N. L. Steiner, Toronto, $6; 2nd do, J. W. Smith, London, $4.

Best decorative house painting, Jno. Moser, Toronto, $5; 2nd do, John Moser, Toronto, $3,

Best engraving on wood, with proof, John E. Ellis, Toronto, $5; 2nd do, Thomas Whalen, Toronto, $3.

Best geometrical drawing of engine or millwright work, colored, F. G. Beckett & Co., Hamilton, 2nd prize, $3.

Best heraldic painting, David Hamel, London, $5; 2nd do, Mrs. Caroline Walker, St. Thomas, $3.

Best lithographic drawing, on Canadian stone, W. Anderson, London, $5.

Best modelling in plaster, W. Ward, London, $6.

Best monumental tomb or headstone, J.W. Smyth, London, $6; 2nd do, J. W. Smyth, London, $4.

Best painting, in imitation of wood and marble, T. P. Knaggs, London, $5; 2nd do, McCausland & Horwood, Toronto, $3; highly commended, Colerick & Stephens, Goderich.

Best picture frame, ornamented gilt, R. J. Sedden, London, $5; 2nd do, do, $3.

Best picture frame, plain gilt, R. J. Sedden, London, $4; 2nd do, do, $2.

Best seal engraving, with wax impressions, T. Wheeler, Toronto, $6.

Best silvermith's work, C. H. VanNorman, Hamilton, $5; 2nd do, do, $3.

Extra Prizes.—John R. Peel, London. sculptured head in marble, diploma and $5. F. Tisdale, Adelaide, two picture frames, $3, R. J. Sedden, London, imitation porcelain vase, $3. John Phillips, London, specimens of lithographic engraving, $3. Alex. Taylor, York, Grand River, gypsum for stucco work, $4. G. W. Woodsworth & Co., Brantford, double water drawer, and single do, $4. Jas. Deadman, London, painted work table, $4; do, do, coat of arms on glass, $4. G. R. & G. M. Tremaine, Toronto, specimens of maps engraved on stone, $5. S. Damerall, London, inkstand, mosaic work, $3. W. R. Orr, Toronto, engraved copy slips of an improved system of ladies' writing, diploma.

CLASS XLI.—CABINET WARE AND OTHER WOODEN MANUFACTURES.—(86 Entries.)

Judges—Messrs. William Watt, Brantford; and David A. Robertson, St. Mary's.

Best set bed room furniture, S. P. Leake, London, $3.

Best centre table, G. Fischer, Morriston, $6; 2nd do, H. Coombs, London, $4.

Best drawiug room sofa, H. Coombs, London, $7.

Best set drawing room chairs, H. Coombs, London, $7.

Best set drawing room furniture, H. Coombs, London, $8; 2nd do, Mills & Anundsen, London, $6.

Best six corn brooms, John Darling, London, $2.

Best cooper's work, C. Lewis, Salford, $3; 2nd do, J. Elliott, Guelph, $2.

Best curled hair, 10 lbs., H. Coombs, London, $3; 2nd do, S. Carr, Yorkville, $2.

Best door, four or six panelled, Grant & Thompson, Ingersoll, $3.

Best three flour barrels, C. Lewis, Salford, $3; 2nd do, Robert Abbs, London, $2.

Best collection handles for tools, for carpenters, blacksmiths, gunsmiths, watchmakers, &c., J. J. Beatty, Credit Mills, Streetsville, $8.

Best specimen joiner's work, Grant and Thompson, Ingersoll, $4.

Best machine wrought moulding, 100 feet, C. Heise, Preston, $3.

Best machine-wrought flooring, 100 feet, McLean & Clark, Morriston, $3; 2nd do, do, $2.

Best shingles, two bundles, split, George Nixon, London, $3.

Best specimens turning in wood, J. J. Beatty, Credit Mills, Streetsville, $5.

Best veneers from Canadian woods, Clement & Purdy, Newbury, $5; 2nd do, H. Coombs, London, $3.

Best wash-tubs and wooden pails, three of each, C. Lewis, Salford, $3; 2nd do, do, $2.

Best six wash-boards zinc covered, W. Tait & Co., Duart, $2; 2nd do, do, $1.

EXTRA PRIZES.—Franz Kistenmacher, Morriston, ladies' writing table, $5. Coridon Lewis, Salford, six axe handles, $1. J. J. Beatty, Streetsville, eccentric turning in wood and ivory, $2. Wm. Tait, & Co., Duart, half-dozen broom handles, $1; do, half-dozen mop handles, $1. Joseph Brickley, Orwell, self-revolving hand loom, $2. Charles Bennett, London, Lady's work table, $2. Henry Coombs, London, half-dozen Windsor chairs, $1. George Bentley, Clinton, ladies' work-box $2. Mills & Anundsen, London, gentlemens' toilet-stand, $2; do, drawing-room fire screen, $1. Thos. McIlroy, Brampton, invalid bedstead, $5. Phillip Rapp, Whitby, specimen varnishing and polishing piano tops, $1; do, flowing set of carved piano legs, $2. John Powers, Stratford, washing machine, $1. S. E. Lawrence, Granby, washing and wringing machine, $2. Peter Welsh, Montreal, turning in ivory, $1. Wm. Thomas, Port Hope, self-protecting escritoir, diploma. Thomas Thorpe, Guelph, model of patented removable window sash, $3.

CLASS XLII.—CARRIAGES AND SLEIGHS, AND PARTS THEREOF.—(53 Entries.)

Judges.—Messrs James Kay, Galt; A. E. Munson, Cobourg; and James E. McDonald, Aylmer.

Best axle, wrought iron, W. Chambers, London, $3.

Best six bent shafts, R. McKinley & Co, St. Catherines, $3; 2nd do, A. Esson, London, $2.

Best buggy, single seated, H. Dart, London, $5; 2nd do, W. & J. McBride, London, $3.

Best pleasure carriage, two horse, J. Campbell, London, $10; 2nd do, W. & F. Platt, London, $6.

Best pleasure carriage, one horse, W. & J. McBride, London, $7; 2nd do, J. Campbell, London, $5.

Best two pair carriage hubs, E. Rockey, Union, Elgin County, $3; 2nd do A. Esson, London, $2.

Best two pairs of carriage rims or felloes, W. R. McKinley & Co., St. Catharines, $3; 2nd do, do, do, $2.

Best one dozen machine-made carriage spokes, W. R. McKinley & Co., St. Catharines, $3.

Best pleasure sleigh, two horse, J. Campbell, London, $7.

Best pleasuae sleigh, one-horse, W. & J. McBride, London, $6.

Best set steel carriage springs, Isaac Briggs, Gananoque, $3.

Best pair of carriage wheels, unpainted, W. & J. McBride, London, $4; 2nd do, J. Campbell, London, $3.

EXTRAS.—Isaac Briggs, Gananoque, railway car spring, $3. John Campbell, London, dog cart, $4. A. Esson, London, buggy spin-

dles$1; buggy seat arms, $1; bent stuff for pleasure slegh,$1; variety of bent stuff for carriages, &c., $1 50. R. McKinley & Co. St. Catherines, two sets bent buggy top bows, $1; W. & J. McBride, London, road waggon, $4.

CLASS XLIII.—CHEMICAL MANUFACTURES AND PREPARATIONS.—(23 Entries.)

Judges—H. Y. Hind, Toronto; N. Higinbotham, Guelph, and Duncan McMillan, Dundas.

Best blacking for shoes, P. R. Lamb, Toronto, $2.

Best glue, 14 lbs, S. Carr, Yorkville, $3; 2nd do, P. R. Lamb, Toronto, $2, 3rd S. Carr, Yorkville, $1.

Best medicinal herbs, roots and plants, native growth, W. Saunders, London, $7.

EXTRAS.—W. Saunders, London, pharmaceutical preparations, $4. James John Giles London, friction matches, $2.

REMARKS.—In reference to medical herbs and roots, the Judges are of opinion that a specimen of the entire plant should accompany each specimen of leaf, root or stalk, as the case might be. The collection of medicinal plants is excellent, and the subject is one which claims greater attention than it has hitherto received.

CLASS XLIV.—FINE ARTS.

Professional list—Oil.

JUDGES—Messrs. H. W. Peterson, Guelph; William Hay, Toronto; G. S. Daintry, Cobourg; and W. M. Wilson, Simcoe.

Best animals grouped or single, W. N. Cresswell, Goderich, $10; 2nd do, R. Whale, Burford, $6.

Best historical painting, Canadian subject, W. N. Cresswell, Goderich, $10.

Best landscape, Canadian subject, R. Whale, Burford, $10; 2nd do, Miss Gibbon, St. Mary's, $6.

Best marine painting, Canadian subject, W. N. Cresswell, Goderich, $10; 2nd do, do,

Best original composition, any other subject, Miss Gibbon, St. Mary's, $10; 2nd do, John Griffith, London, $6.

Best portrait, R. Whale, Burford, $8; 2nd do, do. $5.

In Water Colors.

Best flowers, grouped or single, Miss Gibbon, St. Mary's, $7; 2nd do, Capt. Caddy, Hamilton, $3.

Best landscape, Canadian subject, Capt. Caddy, Hamilton, $7; 2nd do, do, $5.

Best marine view, Canadian subject, Capt. Caddy, Hamilton, $7; 2nd do, C. S. Millard, Toronto, $5.

Best other original composition, Capt. Caddy, Hamilton, $7; 2nd do, A. J. Cox, Hamilton, $5.

Pencil, Crayon, &c.

Best crayon, colored, Mrs. V. Cronyn, London, $5; 2nd do, E. H. Longman do, $3.

Best crayon, plain, Miss Gibbon, St. Mary's, $5; 2nd do, Miss A. Bushell, London, $3.

Best pencil drawing, Miss Gibbon, St. Mary's, $5; 2nd do, C. S. Millard, Toronto, $3; Extra, Mrs. S. A. Secord, Acton west, $3.

Best pen and ink sketch, J. G. Horne, Toronto, $5; 2nd do, Mrs. C. Walker, St. Thomas, $3.

Best portrait in pencil, J. Wanless, Newbury, $5.

Best portrait in crayon, J. W. Bridgeman, Smithville, $5.

Amateur List—Oil.

Best animals, grouped or single, J. H. Whale, Burford, $7; 2nd do, E. C. Gourlay, Hamilton, $5.

Best historical painting, Canadian subject, J. H. Whale, Burford, $7.

Best landscape, Canadian subject, J. H. Whale, Burford, $7; 2nd do, do, $5.

Best marine painting, Canadian subject, J. H. Whale, Burford, $7; 2nd do, do, do, $5.

Best other original composition, J. H. Whale, Burford. $7; 2nd do, J. Cooper, London, $5.

Best portrait, J. Ashton, London, $6; 2nd do, Miss Beddome, London, $4.

In Water Colors.

Best animals, grouped or single, W. Ambrose, Hamilton, $6; 2nd do, Mrs. J. McFarlane, Thorold, $4.

Best flowers grouped or single, J. Griffith, London, $4; 2nd do, Miss Gemmell, London, $3.

Best landscape, Canadian subject, W. Ambrose, Hamilton, $6; 2nd do, Mrs. C. Walker, St Thomas, $4.

Best marine view, Canadian subject, W. Ambrose, Hamilton, $6.

Best miniature portrait, J. Griffith, London, $4.

Best other original composition, C. D. Bettridge, Woodstock, $6; 2nd do, W. Ambrose, Hamilton, $4.

Pencil, Crayon, &c.

Best crayon, colored, Miss Maughan, Toronto, $4; 2nd do, Miss Hope, London, $3.

Best crayon, plain, V. Briscoe, Toronto, $4; 2nd do, Miss McCann, London, $3.

Best pencil drawing, Miss Maughan, Toronto, $4; 2nd do, V. Briscoe, Toronto, $3.

Best pen and ink sketch, E. C. Gourlay, Hamilton, $4; 2nd do, W. Brookland, Thamesford, $3.

Best portrait in pencil, J. Cameron, St. Mary's, $4; 2nd do, A. McKintrick, London, $3.

Best portrait in crayon, J. Cameron, St. Mary's, $4; 2nd do, Miss McCann, London, $3.

Photography.

Best collection of ambrotypes, James Egan, London, $5; 2nd do, S. Smith London, $3.

Best Photograph portraits, colored, J. Egan, London, $7; 2nd do, Carson, Bros., Toronto, $5.

Beet photograph portraits, plain, James Hay, Toronto, $6; 2nd do, Carson Bros., do., $4.

Extras.—James Hay, Toronto, Case cartes des visites, $3. S. M. Logan, London, penmanship, commended, A. B. Scott, Brampton, penmanship commended. Isaac Bates' jr., Hamilton, penmanship, commended. Miss Maughan, Toronto, two water color drawings, copies, $4. Carson Bros., Toronto, collection photographs retouched in India ink, commended; do. do, ivory types, $3. Chas. Hunt, London, steel engravings, commended. W. McLeod, Ingersoll, ornamental penmanship, commended. James Egan, London, photographs retouched in India ink, $3.

Remarks.—In presenting our Report, we have much pleasure in congratulating the Association upon the improvement in Art evinced at the present exhibition, many of the pictures being most creditable to the artists. We would, however, suggest that if a little more care were taken in arranging the subjects according to their respective sections, much time would be saved, and perhaps more correct decisions might be arrived at.

CLASS XLV.—FURS AND WEARING APPAREL.—(24 Entries.)

Judges.—Messrs. J. McQuaig, St. Mary's; and Samuel Brasher, Vienna.

Best business coat, John W. Eccleston, London $4.

Best fur cap, Philip McCann, London, $3; 2nd do, Henry Ferdinand, Waterloo, $2.

Best fur gloves, mits, or gauntlets, Philip McCann, London, $3.

Best fur sleigh robe, Philip McCann, London, $4; 2nd do, Henry Ferdinand, Waterloo, $3.

Best gloves and mits, buckskin, E Panton, $2; 2nd do, Henry Ferdinand, Waterloo, $2.

Best gloves and mits of any other leather, E. Panton, London, $2.

Best silk hat, E. Beltz, London, $3; 2nd do, E. Beltz, London, $2.

Best suit of clothes of Canadian cloth, T. G. Furnival, Hamilton, $5.

Extras.—Phillip McCann, London, set of ladies' mink furs, $5; E. Beltz, London, set of ladies mink furs, $2; do, lot of black cloth caps, $1.

CLASS XLVI—GROCERIES AND PROVISIONS.—(124 Entries.)

Judges.—Messrs. D. McLaren, Mitchell; John Arkell, Aylmer; and James McMonies, jun., Waterdown.

Best barley, pot and pearl, Alexander Mitchell, York, $3; 2nd do, Alexander Mitchell, do, $2.

Best assortment biscuits, W. Christie, Yorkville, $4; 5nd do, John Nasmith, Toronto, $3.

Best lot bottled fruits, Mrs. Jesse Thomson, Yorkville, $3.

Best lot bottled pickles, W. T. Erith, London, $3; 2nd do, S. D. Hopkins, Stoney Creek, $2.

Best buckwheat flour, R. Somers, Byron, $3.

Best Cayenne pepper, from capsicums, grown in the Province, H. Girouard, Hamilton, $2.

Best chickory, 20 lbs, George Pears, Yorkville, $3.

Best assortment confectionery, Henry Starr, Brockville, $4; 2nd do, H. Fysh, London, $2.

Best jar Mustard, H. Girouard, Hamilton, $3.

Best oatmeal, James Wilson, Eden Mills, $3; 2nd do, James Wilson, do, $2.

Best six kinds preserves, Mrs. Caroline Dorman, London, $3; 2nd do, Mrs. Jessie Thomson, Yorkville, $2.

Best can preserved meats, Mrs. Jesse Thomson, Yorkville, $3.

Best sauces for table use, Mrs. Wm. Lawrason, London, $3; 2nd do, Mrs. Jesse Thomson, Yorkville, $2.

Best starch, 12lbs of corn, E. A. McNaughton, Newcastle, $2 ; 2nd do, do, do, $1.

Best starch, 12 lbs of potato, E. A. McNaughton, Newcastle, $2 ; 2nd do, George Colcleugh, Ayr, $1.

Best sugar, 20 lbs maple, Henry Sharon, Frome, $3 ; 2nd do, Wm. Peers, Woodstock, $2.

Best sugar, one loaf of refined, D. Tiffaney, Delaware, $3.

Best 14 lbs, Canadian manufactured tobacco, Geo. E. Tuckett, London, $3 ; 2nd do, do, $2.

Best wheat flour, Charles Hunt, London, $4; 2nd do, W. Lundie, Carradoc, $3.

Extras.—E. A. McNaughton, Newcastle, arrow root, $2. H. Fish, London, bride's cake, $2. David Wilson, Chatham, two sides bacon and two hams, $2. John Bobier, Tyroconnell, one gallon maple syrup, $1. Geo. E. Tuckett, London, fifteen boxes Canadian manufactured cigars, $2. Mrs. Caroline Dorman, London, maple molasses, $1. D Gardner, St. Thomas, fancy breads, $1. W. Saunders, London, fruit essences and syrups, $3. W. T. Erith, London, assortment of currant wine, raspberry wine and ginger wine, $2. R. A. Pilgrim & Co., Hamilton, assortment of ginger wine, champagne cider, elderberry wine, soda water and sarsaparilla, $3. John Symmonds, London, bacon, sugar cured hams, and Bologna sausages, $4. Mrs. Charles, Yorkville, cherry wine, black currant wine, raspberry brandy, raspberry vinegar, and black currant vinegar, $2. Mrs. Jesse Thomson, Yorkville, currant cordial, $1. Charles Arnold Paris, rhubarb and grape wines, $2. C. Maine, London, English filberts, $1.

CLASS XLVII.—INDIAN WORK.—(30 Entries).

Judges.—Messrs. S. McCuaig, St. Mary's; and Samuel Brasher, Vienna.

Best bark canoe, C. W. Hodgetts, London, $2; 2nd do, J. F. Jones, Brantford, $1.

Best clothes basket, J. F. Jones. Brantford, 50c.

Best fruit basket, J. F, Jones, Brantford, $1; 2nd do, do, do, 50c.

Best hand basket, J. F. Jones, Brantford, 50c.

Best Indian cradle, J. F. Jones, Brantford, 50c.

Best two paddles, J. F. Jones, Brantford, $1.

Best pipe of peace, J. F. Jones, Brantford, $2.

Best pair snow shoes, common size, J. F. Jones, Brantford, 50c.

Best pair snow shows, small size, C. W. Hodgetts, London, 50c.

Best tobacco pouch, J. F. Jones, Brantford, 50c.

Extras.—John R. Flock, London, case of Indian and other curiosities, $1 50. J. F. Jones, Brantford, collection of articles of Indian workmanship, $5 50.

Note. Several of the prizes in the above class are reduced from the amount offered in the list, the Judges considering the articles of trifling value, and not deserving of the amounts offered.

XLVIII.—LADIES' WORK.—(487 Entries.)

Judges—Mrs. R. L. Denison, Toronto ; Miss Helen Thomson, Carleton West ; Mrs. J. M. Bennett, London ; Mrs. Sterling, and Mrs. J. Beatty, London.

Best bonnet of Canadian straw, Mrs. W. H. Buttery, London, $4.

Best braiding, Miss Eliz. Meyer, London, $4 ; 2nd do, Mrs. Bates, Hamilton, $3.

Best crochet work, Miss Bidwell, Colborne, $4 ; 2nd do, A. Hardinge, London, $3.

Best embrodery in Muslin, Miss Christie, Toronto, $4; 2nd do, Miss Mitchell, London, $3 ; do, Miss E. Green, London, commended.

Best embroidery in silk, Miss A. Gemmell, Brockton, $4; 2nd do, Mrs. Pollard, Toronto, $3.

Best embroidery in worsted, Mrs. Bernard, London, $4; 2nd do, Mrs. John Wilson, London, $3.

Best guipure work, Miss Bidwell, Colborne, $4; 2nd do, do, do, $3.

Best hat of Canadian Straw, Mrs. Moorehouse, Nilestown, $4 ; 2nd do, Miss C. Dorman, London, $3.

Best knitting, Mrs. Unwin, Toronto, $4 ; 2nd do, Mrs. Wanless, London, $3 ; do, Miss Ellen Hamilton, London, commended.

Best lace work, Miss Potter, London, $4 ; 2nd do, Miss Bidwell, Colborne, $3 ; do, Miss Bemar, Hamilton, commended.

Best three pairs woollen mittens, Mrs. Wm. Pearce, Wallacetown, $3; 2nd do, Miss J. Allen, Ingersoll, $2.

Best needle work, ornamental, Mrs. V.

Fisher, Glanworth, $4; 2nd do, Mrs. Carey, Brantford, $3.

Best fancy netting, Mrs. W. H. Buttery, London, $4; 2nd do, Miss M. R. Hill, Kingston, $3.

Best quilts in crochet, Miss Stedman, London, $4; 2nd do, Miss Porte, do, $3

Best quilts in knitting, Mrs. B. Foster, London, $4; 2nd do, Miss Spettigue, London, $3.

Best quilts in silk, Mrs. Egar, London, $4; 2nd do, Mrs. Burt, Port Stanley, $3.

Best quilts in piecework, Mrs. J. Barclay, London, $4; 2nd do, Mrs. Jacob Morse, Fingal, $3.

Best gentleman's shirt, Miss E. Robb, London, $3; 2nd do, Mrs. Jas. White, Bronte, $2.

Best three pairs woollen socks, Mrs. Wm. Pearce, Wallacetown, $3; 2nd do, Mrs. Wm. Niles, Nilestown, $2.

Best three pairs woollen stockings, Mrs. Hyman, London, $3; 2nd do, Mrs. John Allen, Ingersoll, $2.

Best tatting, Miss L. A. Fuller, Thorold, $4; 2nd do, Miss Boys, Barrie, $3.

Best wax fruit, Miss G. Stripp, Belmont, $5.

Best wax flowers, Mrs. R. McKay, London, $5; 2nd do, Miss Isabella S. Niven, Niagara, $3.

Best worsted work, Miss R. Evans, London, $4; 2nd do, Mrs. H. Chisholm, do, $3; do, Mrs. Beddome, London, commended.

Best worsted work, (raised) Miss Ferguson, Pittsburgh, $4; 2nd do, Mrs. Bates, Hamilton, $3.

Extras.—Mrs. E. D. Moore, Eglington, 2 pairs woollen stockings, $1. Mrs. Urquhart, Komoka, pair ladies' elastic stays, $4. Mrs Nickerson, Port Dover, hair flowers, $2. hearth rug, raised work, $2. Mrs. W. Radcliffe, Adelaide, fancy cabinet, $2. Miss Annie Bushell, London, paper flowers, $1; Miss Beddome, London, crape embroidery. $2. Mrs. Jacob Morse, Fingal, white cambric quilt, $3. Mrs. James McQueen, Fingal, quilt, $3. Mrs. E. Fairbank, Clifton, pair screens, $2. Mrs. R. McKay, London, wax vase, $3. Mrs. Hiram Lee, London, feather flowers, and frame, $2. Mrs. W. Lawrason, London, worked table cloth, $2. Mrs. Thomas, London, banner screen, $2. Mrs. S. A. Secord, Acton West, ornamental sea moss work, $2. Miss M. Carmichael, Fingal, hair wreath, $2; fancy basket, $1.

CLASS XLIX.—MACHINERY & MODELS THEREOF, CASTINGS AND TOOLS.—(73 Entries.)

Judges—Messrs. Robert Melvin, Guelph; James Davidson, Cobourg; and Richard Eaton, Hamilton.

Best cast wheel, spur or bevel, not less than 50 lbs., Blaikie & Clark, Sarnia, $4; 2nd do, do, $3.

Best castings for railways, railroad cars and locomotives, John Gartshore, Dundas, $10; 2nd do, Thos. Fogg, Brantford, $6.

Best steam engine, of one to four horse power, in operation on the ground, F. G. Beckett & Co., Hamilton, $15.

Best metal pump, Edwin Rodgers. London, $4; do. extra, Cameron & Harris, Kingsville, $4.

Best six chopping axes, Jeremiah Hourigun, Dundas, $3; 2nd do, Aitkin Wilkie, London, $2.

Best assortment of edge tools, Jeremiah Hourigan, Dundas, $12.

Best moulding planes and plows, Robt. McKechnie, Dundas, $2.

Extras.—Samuel Brown, London, Nos. 1 and 2 Singer's sewing machines, diploma. S. S. Martin, Toronto, sewing machines for manufacturers' use, diploma; family sewing machines, $3. L. N. Soper, Woodstock, sewing machines for manufaoturers' use, $3. Ganson Waterous & Co., Brantford, eight horse power portable steam engine, diploma and $15. W. H. Gibson, cracker and biscuit machine, office printing press and copying presses, coffee mill, sugar mill, and eyelet stamp, $10 and diploma. David Bruce, Glenmorris, improved wood sawing machine, diploma and $6. John Gartshore, Dundas, bran duster for mills, $3. James Forrest, Ontario, self-acting railway cattle guard, diploma. P. T. Ware & Co., Toronto, model of sewing machine brake, diploma. Thomas Fogg, Brantford, model of patent ballasting car, diploma.

CLASS L.—METALWORK, PLAIN AND ORNAMENTAL, INCLUDING STOVES.—(82 Entries.)

Judges—Messrs. H. Sills, Vienna; and James Buchanan, Aylmer.

Best assortment of fire arms, Philo Soper, London, $5; 2nd do, Edward Parkhurst, Stratford, $3.

Best collection of cast steel files, Hays & Hart, Hamilton, $3; 2nd do, W. L. Kinmond, Dundas, $2.

Best fire proof office safe, J. & J. Taylor, Toronto, $6, 2nd do, do, $4.

Best set of horse shoes, William Mahaffy, Brampton, $2; 2nd do, Wm. Weeks, Woodstock, $1.

Best iron work from the hammer, James Berry, Wellington Square, $5; 2nd do, Wm. Weeks, Woodstock, $3.

Best iron work, ornamental cast, Robert Bland, London, $5; 2nd do, Wm. Symons, London, $3.

Best assortment of locksmith's work, E. Wilmot, Kingston, $5; 2nd do, J. & J. Taylor, Toronto, $3.

Best nails, 20 lbs. of pressed, Isaac Briggs, Gananoque, $5.

Best nails, 20 lbs. of cut, Isaac Briggs, Gananoque, $5; 2nd do, do, $3.

Best assortment plumber's work, Edward Rogers, London, $5.

Best assortment sheet brass work, John Kidd, Harpurhey, $5.

Best assortment wire work, F. L Field, Brantford, $6.

Best cooking stove for wood, with furniture, Murray Anderson, London, $5; 2nd do, George Jackson, London, $3.

Best hall stove for wood, George Jackson, London, $4.

Best parlor stove for wood, Murray Anderson, London, $4; 2nd do, do, $2.

Extras.—Edward Rogers, London, baking apparatus, $3; shampooing apparatus, $2. Willet Ferris, Kingston, two pairs shaft snaps, $1 50. A. E. Taylor, Brockville, improved door bell, $4. Murray Anderson, London, cast iron stove teakettle, $1. H. Berniers, Lotbiniere, C.E., fancy double stoves, diploma. John Gurd, London, rifle safety lock, $8; pistol safety lock, $5; threebarrelled rifle, $4.

CLASS LI.—MISCELLANEOUS.—(15 Entries.)

Judges—Messrs. Andrew Patton, Vienna; Jno. Anderson, Dundas; and H. R. O'Reilly, Waterdown.

Best assortment of brushes, C. Boeckh, jr., Toronto, $5; 2nd do, do, $3.

Best model of a sailing vessel, John Bulmer, Brantford, $4; 2nd do, C. Leonard, Clifton, $3.

Extras.—Norris Black, Toronto, collection artificial limbs, $4. Henry Palmer, London, improved voltaic battery, $3. William Saunders, London, perfumery, $4. John Condell, Brockville, collection artificial limbs, $4. R. E. Jackson, London, model eight oared gig, $4.

CLASS LII.—MUSICAL INSTRUMENTS—(31 Entries.)

Judges—Messrs. J. D. Humphreys, Toronto; W. W. Carey, Bandmaster Canadian Rifles; and Prof. H. F. Chalaupka, Cobourg.

Best melodeon, S. R. Warren, Montreal, $6 and diploma; 2nd do, Andrus Brothers, $4 and diploma; do, R. S. Williams, Toronto, highly commended.

Best piano, square, Joseph T. Rainer, Whitby, $10 and diploma; 2nd do, C. L. Thomas, Hamilton, $6 and diploma.

Best violin, Coridon Lewis, Salford, $3.

Extras.—D. P. Merrill, Dawn, improved dulcimer, $2. R. S. Williams, Toronto, home tanned calf drum heads, $2; lot of musical instruments, $5. Mills & Anundsen, London, wind harp, $1.

Remarks.—The judges have much pleasure in noticing the increased improvement made in pianos since last exhibition, in not only elaborate and finished workmanship, but superiority of tone. Those of Thomas & Co., of Hamilton, and Rainer, of Whitby, deserve especial attention, and reflect the very highest credit on both parties. But the judges respectfully give it as their opinion that the prizes are totally inadequate. It should be borne in mind that the instruments are difficult and costly in transportation, and moreover are always liable to more or less damage. They trust, therefore, they are not overstepping their duty in recommending that the amount in this department should be increased.

CLASS LIII.—NATURAL HISTORY.—(28 Entries.)

Judges—Messrs. W. N. Alger, Brantford; A. McCallum, Hamilton; and T. G. Cottell, Woodstock.

Best collection of stuffed birds of Canada, classified, with common and technical names attached, William Porte Ingersoll, $7; 2nd do, Abel Hine, London, $5.

Best collection of native fishes, stuffed or preserved in spirits, with common and technical names attached, S. W. Passmore, Toronto, $7.

Best collection of native insects, classified, with common and technical names attached, W. Saunders, London, $6; 2nd do, T. Reynolds, Hamilton, $4.

Best collection of stuffed mammalia of Canada, classified, with common and technical names attached, S. W. Passmore, Toronto, $7.

Best collection of native plants arranged in their natural families, and named, Miss Kate Crooks, Hamilton, $7; 2nd do, Mrs. W. Saunders, London, $5.

Best collection of reptiles of Canada, stuffed, or preserved in spirits, and common and technical names attached, S. W. Passmore, Toronto, $7.

Best collection of stuffed birds and animals of any country, Abel Hine, London, $7; 2nd do, V. Cronyn, London, $5.

Best collection of the woods of Canada, in boards two feet long, one side polished; also, a portion of the tree cut in sections, showing the bark, James Gardner, Cashmere, $7.

EXTRAS.—V. A. Brown, London, fresh water aquarium, $5. William Saunders, London, specimens living native fishes, named and classified, $5.

CLASS LIV.—PAPER, PRINTING, BOOKBINDING, SPECIMENS AND THEIR MATERIALS AND TOOLS. (20 Entries.)

Judges—Messrs. E. R. Dewhurst, Brantford; E. C. Cleuch, Cobourg; and Dr. Barker, Kingston.

Best Bookbinding, (blank-book), Charles Chapman, London, $5.

Best bookbinding, (letterpress), Charles Chapman, London, $5; 2nd do, do, $3.

Best letterpress printing, plain, George Brown, Toronto, 2nd Prize, $3.

Best letterpress printing, ornamental, Geo. Brown, Toronto, $5; 2nd do, Thomas Evans, London, $3.

EXTRAS.—George Brown, Toronto, letterpress printing, cards, $2; do, do, do, posters, $3; do, do, do, various kinds, $3. James A. Campbell, Georgetown, mailing machine, $4; do, do, do, $3.

CLASS LV.—POTTERY, BUILDING AND PAVING MATERIALS. (32 Entries.)

Judges—Messrs David Burnett, Cobourg; James Whimster, St. Mary's; and Adam Oliver, Ingersoll.

Best 1 dozen hollow bricks for building purposes, Joseph Close, Woodstock, $5; 2nd do, do, $3.

Best filterer for water, Marlatt & Akrons, Paris, $3; 2nd do, W. Lea, Toronto, $2.

Best assortment pottery, Marlatt & Akrons, Paris, $8, and diploma; 2nd do, John Richardson, Katesville, $4.

Best sewerage pipes, stoneware, assortment of sizes, W. & R. Campbell, Hamilton, $6. 2nd do, F. P. Gould & Co., Brantford, $4.

Best assortment stoneware, F. P. Gould & Co., Brantford, $6; 2nd do, do, $4.

Best slates for roofing, Benjamin Walton, Toronto, $5.

EXTRAS.—Joseph Close, Woodstock, 1 dozen pressed bricks, $2; 1 dozen stock bricks, $2. Mrs. Townsley, Yorkville, assortment train tiles, $2. Thos Nightingale, Yorkville, assortment drain tiles, $3; fancy bricks, $2. John McGregor, London, common bricks, $1.

CLASS LVI. — SADDLE, ENGINE HOSE AND TRUNK MAKERS' WORK, LEATHER, &c.—(61 Entries.)

Judges.—Messrs Duncan McKay, Brantford; Thos. Morrow, Cobourg; and William Davidson, Hamilton.

Best set of double harness, Robert Hay, Woodstock, $6.

Best set of single carriage harness, A. Lochrey, London, $5. 2nd do, do, $3.

Best set of team harness, M. F. Moore & Son, St. Thomas, $5.

Best six assorted carriage and team horse collars, Wm. Stewart, Toronto, $3.

Best ladies' quilted saddle, Alex. Chalmers, Dundas, $6; 2nd do, W. Stewart, Toronto, $4.

Best gentlemen's plain shaftoe saddle, A. Lochrey, London, $4; 2nd do, do, $3.

Best assortment of whip thongs, Isaac Mc Michael, Hamilton, $3.

Best hames, six pairs of wooden team, W. Tate & Co., Duart, $3; 2nd do, Wm. Stewart, Toronto, $2.

Best ladies' saddle tree, Wm. Stewart, Toronto, $3.

Best gentlemen's saddle tree, Wm. Stewart, Toronto, $3.

Leather—Best belt leather 30 lbs. Robt. Johnston, Fergus, $3.

Best brown strap and bridle, one side of each, S. Morrill, London, $3 and diploma; 2nd do, Robert Johnston, Fergus, $2.

Best carriage covers, two skins, Robt. Johnston, Fergus, $3.

Best deer skin, dressed, Henry Ferdinand, Waterloo, $2.

Best harness leather, two sides, McKay & Horner, London, $3; 2nd do, W. Maklem, Chippawa, $2.

Best lacing leather, one hide, Robert Johnston, Fergus, $2.

Best patent leather for carriage or harness work, 20 feet, Robert Johnston, Fergus, $5.

Best skirting for saddles, two sides, W. M.

Macklem, Chippawa, $3; 2nd do, S. Morrill, London, $2.

Extras. — McKay & Horner, London, specimens leather, $2. Robert Johnston, Fergus, patent winker leather, $2; patent dash leather, $2.

CLASS LVII—SHOE AND BOOT MAKERS' WORK, LEATHER, &c.—(89 Entries.)

Judges. — Messrs. William Wilson, Woodstock; David Abel, Simcoe; and William Begg, London.

Best Balmoral boots, one pair of ladies', John McPherson, London, $3; 2nd do, John Crabb, London, $2.

Best assortment shoemaker's work, Thomas Webb, London, $6; 2nd do, John Sims, Toronto, $4.

Best kid slippers, one pair of ladies' John Sims, Toronto, $2; 2nd do, Thomas Webb, London, $1.

Best lace boots, one pair of gentlemen's sewed, John Crabb, London, $3; 2nd do, Thomas Webb, London, $2.

Best lace boots, one pair of gentlemen's pegged, John McPherson, London, $3; 2nd do, Thomas Webb, London, $1.

Best Wellington boots, one pair of gentlemen's sewed, Thos. Webb, London, $4; 2nd do, John McPherson, London, $3.

Best assortment of boots and shoemaker's lasts and trees, W. A. Young, Dundas, $6; 2nd do, Selway & Ireland, Toronto, $4.

Best assortment of shoe pegs, W. A. Young, Dundas, $3; 2nd do, George Colcleugh, Ayr, $2.

Leather.

Best two calf skins, E. W. Hyman, London, $3; 2d do, Robert Johnston, Fergus, $2.

Best two Morroco calf skins, Robert Johnston, Fergus, $3; 2nd do, W. M. Macklem, Chippawa, $2.

Best two skins cordovan, Robert Johnston, Fergus, $3.

Best two sides kip skins, W. M. Macklem, Chippawa, $3; 2nd do, McKay & Horner, London, $2.

Best 20 feet patent leather for boots, J. Milburne & Co., Oakville, $5; 2d do. do, $3.

Best two sides sole leather, M. T. Moore & Son, St. Thomas, $3; 2nd do, McKay & Horner, London, $2.

Best two sides upper leather, E. W. Hyman, London, $3; 2nd do, W. M. Macklem, Chippawa, $2.

Extras.—W. M. Macklem, Chippawa, grain upper leather, $2. Tye & Collins, Whitby, grain upper leather, $2; grain calf shin, $3. W. A. Young, Dundas, crimping machine, $3; boot polishing machine, $2.

CLASS LVIII.—WOOLLEN, FLAX, AND COTTON GOODS.—(172 Entries.)

Judges.—Messrs. John Kirkland, Aylmer and Bernard Saunders, Toronto.

Best pair woollen blankets, Alexander Dolsen, Chatham, $6; 2nd do, John Woodhull, Komoka, $4.

Best 12 yards woollen carpet, John Campbell, Kilworth, $6; 2nd do, James J. Farley, Cannifton, $4.

Best 12 yards cloth, fulled, Wm. Pearce, Wallacetown, $6; 2nd do, John Decow, Port Dover, $4, 3rd do, Joseph J. Clutten, Aylmer, $2; do Wm. T. Smith, Lambeth, commended.

Best two counterpanes, John Woodhull, Komoka, $5; 2nd do, Daniel Shaw, Belmont $3.

Best 28 lbs flax or hemp cordage, Alex. Main & Co., Hamilton, $5, and Diploma.

Best assortment of cordage and twines from Canadian flax or hemp, Alex. McMain & Co., Hamilton, $6, and Diploma.

Best pair woollen drawers, factory made, Stewart & Thomson, Guelph, $4; 2nd do, J. G. Crane, Ancaster, $2.

Best 12 yards flannel, not factory made, James J. Farley, Cannifton, $5; 5nd do, Thos. Jackson, Arva, $3.

Best 12 yards Kersey, for horse clothing James J. Farley, Cannifton, 2nd prize, $3.

Best 12 yards linen goods, John Pearce, Tyrconnell, $5.

Best three woollen shawls, W. Pearce, Wallacetown, $5.

Best 3 woollen shirts, factory made, Jasper G. Crane, Ancaster, $5, and Diploma; 2nd do, Stewart & Thomson, Guelph, $3.

Best 3 pairs woollen stockings, factory made, Jasper G. Crane, Ancaster, $4; 2nd do, Stewart & Thomson, Guelph, $2.

Best 3 pairs woollen socks, factory made, Jasper G. Crane, Ancaster, $2; 2nd do, Stewart & Thompson, Guelph, $1.

Best 3 pairs, mixed woollen and cotton stockings, factory made, Jasper G. Crane, Ancaster, $4.

Best 12 yards winter tweed, W. Young, Lees & Griffith, Byron, $6; 2nd do, John Sugden, Thamesford, $4.

Best 12 yards summer tweed, J. Clutten, Aylmer, $6; 2nd do, do, do, $4.

Best assortment woollen shawls, stockings, drawers, shirts and mits, Jasper G. Crane, Ancaster, $7, and Diploma.

Best 1 pound woollen yarn, white, Jasper G. Crane, Ancaster, $2, and Diploma; 2nd do, do do, $1.

Best 1 pound woollen yarn, dyed, Jasper G. Crane, Ancaster, $3; 2nd do, Mrs. Hannah Morden, London, $2.

EXTRAS.—Crossland & Brown, Dundas, cotton batting, Diploma; William Pearce, Wallacetown, 3 woollen plaids, $2; 12 yards bird's eye linen, $2; 12 yards bird's eye cotton, $2. John Pearce, Tyrconnill, 3 woollen plaids, $4.

CLASS LIV.—FOREIGN MANUFACTURES,—
(29 Entries.)

Judges.—Dr. Beatty, Cobourg; J E. Pell, Toronto; Wm. Edwards, Toronto.

Articles admitted for exhibition only; but Certificates awarded to any articles of worth, or peculiar merit.

Germain & Co., Buffalo, N. Y., Pennsylvania Rock Oil, Diploma.

Hurlburt, U. S., stave sawing and dressing machine, Diploma.

AMATEUR MUSICAL BANDS.

(Four Bands in Competition.)

Judges.—G. W. Strathey, Mus. Doc., Toronto; Messrs. J. D. Humphreys, Toronto; and W. W. Carey, band-master R. C. R, London.

For the best Canadian Amateur band, consisting of not less than eight performers, of whom there shall not be more than two professional artists, Cobourg Brass Band, $100; 2nd do, Guelph Union Brass band, $75; 3rd do, London Artillery band, $50.

Miscellaneous.

HOUSE SPARROWS.—These, by far the ugliest and most impudent of all British birds, swarm in London and the suburbs at all seasons, and are said to number double the amount of human population within the sound of Bowbells. In the fall of the year, and throughout winter, they congregate about two hours before sunset, in the nearest trees, and there make such a din as drowns at times even the roar of London streets. It is from this cause that so many trees in the front grounds of suburban villas, which would otherwise be allowed to grow to their fair proportions, are mutilated and cut down to shapeless trunks. The sparrows in such myriads in a large tree are an intolerable nuisance, while their drippings poison the air. They are kept down in the popular at the end of the Terrace Gardens, by the Terrace cats, which promenade the top of the walls, and scale the trees after them, bagging them easily during their conclaves. When pairing time comes in the spring, the sparrows, in their eagerness to build, will fight like tigers for a site for a nest. Year after year, they build in the open mouth of the waste-pipe from the roof, and as regularly lose a portion of their brood by the sudden showers which wash them away. Their nests are most slovenly affairs, and generally fall to pieces by the time they are done with. —*Chambers' Journal.*

Editorial Notices, &c.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES FOR UPPER CANADA, Toronto, December 1861.

The first volume of this valuable periodical, devoted to the cause of native industry, is completed, and comprises much to interest and instruct in the various branches of Arts and Manufactures. It is under the able editorship of Professor Hind, assisted by Mr. Edwards, the indefatigable Secretary of the Board of Arts and Manufactures. It may not be generally known that this journal can be obtained by members of *all Agricultural Societies*, as well as Mechanics' Institutes organized according to Statute, for the very low sum of half-a-dollar per annum; and we should be happy to hear that a large number of the former have availed themselves of the opportunity.

"In all respects, with the exception of correspondence, has the Journal met with the anticipations of its promoters. As it is impossible with the means at our disposal to obtain information respecting local progress or local wants, we again call attention to that paragraph in the prospectus which refers to the co-operation of others. "All who are ingaged in industrial pursuits, capable of improvement or extension, can recognize the advantages which a journal of the character proposed is capable of conferring; and it is earnestly hoped that many will be willing to contribute information as to what is *now doing* in Canada, and suggestions as to *what may be done* with profit to individual enterprise and advantage to the Province." Such, however, has been the share of encouragement awarded to this Journal, that the Board has determined to enlarge it by four additional pages in each number, or 48 pages in the volume. The monthly issue will also be printed on a larger sheet, and suppled with a cover, stitched and cut. These improvements will, we trust, be met in a liberal and encouraging manner by Mechanics' Institutes, Reading Associations,

and private individuals. The Journal is supplied at the following rates:—At $1 per annum for single copies, or to Clubs of ten or more at 75 cents per copy; to members of Mechanics' Institutes, and of Literary, Scientific and Agricultural Societies, through their Secretary or other Officer, 50 cents per annum per copy."

Vol. I., neatly half bound in coloured sheep, will be supplied for $1; and to Members of Mechanics' Institutes, &c., &c., at 75 cents per copy.

MANUAL OF AGRICULTURE, FOR THE SCHOOL, THE FARM AND THE FIRESIDE, BY G. B. EMERSON, AND C. L. FLINT. Boston: Swan, Brewer, and Tileston, 1861.

We have looked through this work with much pleasure and satisfaction. Although on some few matters, perhaps, comparatively unimportant, our views do not exactly coincide with those of the authors, we do not hesitate to pronounce the book to be admirably adapted to the purpose for which it has been mainly prepared—viz., for the use of schools, and young persons generally who may be in any way connected with rural affairs. Indeed it may be perused with interest and advantage by the most experienced farmers, and cannot fail to impart a most salutary influence to the minds of all who are engaged in agricultural pursuits. Mr. Emerson is favourably known as the author of a valuable "Report on the Trees and Shrubs of Massachusetts," and Mr. Flint has long enjoyed a high reputation, as the author of some of our best modern agricultural publications, on "Milch cows and Dairy Farming," "Grasses and Forage Plants," &c., and who has been for several years the able Secretary of the Masschusetts Board of Agriculture. We hope soon to see this Manual in general use not only in our public schools, but also among the numerous class of young farmers throughout the land. The retail price, we understand, is only 75 cts.

THE SCIENTIFC AMERICAN: Munn & Co., New York.

This able weekly journal of practical information in Art, Science, Mechanics, Agriculture, Chemistry and Manufactures, has long enjoyed the very highest reputation on this continent, and indeed throughout the civilized world, having now completed its seventeenth year. It abounds in good practical and scientific articles embracing the wide field of human industry, profusely illustrated by appropriate and beautifully executed wood engravings. No mechanic can afford to do without it, and the farmer, gardener, and general reader, will find much to interest and instruct. Its articles generally are written in an attractive style, well adapted to the present times, and fully up to the current state of knowledge. It makes two large and handsome volumes a year of 416 pages each;—the printing and paper of the best quality.

TERMS.

To mail subscribers:—Two Dollars a year, or One Dollar for six months. The volumes commence on the first of January and July.

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For all clubs of Twenty and over, the yearly subscription is only $1 40. Names can be sent in at different times and from different Post-offices. Specimen copies will be sent gratis to any part of the country.

Western and Canadian money or Post-office stamps taken at par for subscriptions. Canadian subscribers will please to remit 25 cents extra on each year's subscription to pre-pay postage.

MUNN & CO., PUBLISHERS,
No. 37 Park-row, New York.

THE ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS AND CULTIVATOR ALMANAC FOR 1862, by J. G. Thomas: Albany, N. Y., Luther Tucker & Son.

This little Annual is now two well known and appreciated to need any special recommendation. Like the *Country Gentleman* and *Cultivator* it is got up in the Messrs. Tucker's best style, while the Editor, Mr. Thomas. has shown much industry and sound judgment in getting together and arranging the materials. The present volume is embellished with over one hundred and sixty nicely executed engravings, illustrating farm buildings, Implements, Fruits, Grasses and other subjects of interest to farmers, gardeners, and country residents in general. The wonder is that a work in every way so excellent can be sold for a quarter of a dollar!

Complete sets of the *Annual Register*, 8 numbers, can be had in paper covers for $1.60. *The Country Gentleman* is published weekly

at $2 per annum, and the *Cultivator* monthly, at 50 cents.—We can most conscientiously recommend these excellent publications, and shall be happy to learn of their increasing circulation throughout our North American Provinces.

International Exhibition, London, 1862.

THE Commissioners for Canada at the INTERNATIONAL EXHIBITION of 1862, give notice to all parties desirous of exhibiting Canadian products, whether application has been already made for the exhibition of the same or not, that such articles may be sent in for examination and approval to the following places, at any time between the TENTH DAY of FEBRUARY next, and the undermentioned dates, viz:—

IN CANADA WEST.—London, 18th February; Hamilton, 20th February; Toronto, 22nd February; Kingston, 25th February, and Ottawa, 28th February.

IN CANADA EAST.—Quebec, 14th February; Three Rivers, 18th February; St. Hyacinthe, 22nd February; Sherbrooke, 25th February next; and Montreal, 3rd and 4th March next.

Articles will be received and stored at the Depots of the Grand Trunk Railway Company at London, Toronto, Kingston, Quebec, Point Levi, Sherbrooke and St. Hyacinthe.

The Commisssoners will begin their examinations at 10 o'clock, A. M, of each day named.

Intending exhibitors must deliver the articles for exhibition at the above named places, free of charge. Should they not be approved, the Grand Trunk Railway will return them free of charge, to any depot on their line from which they have been sent.

Parties sending in Grain or Woods are requested to transmit a certificate, stating the species and varieties, and where grown. Woods should be sent of the usual dimensions for commerce, and Her Majesty's Commissioners have expressed a desire that they be shown in planks 4 inches thick, showing the sap on both sides, or in 4 inch scantling, and accompanied, wherever practicable, by twigs with leaves or flowers.

Parties desirous of further information, may apply, concerning Minerals and Specimens of Economic Geology, to Sir W. E. Logan, Montreal; concerning products of the Forests and Waters, to Dr. Tache, Quebec, or Dr. Hurlburt, Hamilton; concerning Agricultural produce, to Hon. L. V. Sicotte, St. Hyacinthe, and Col. Thomson, Toronto; concerning articles of Canadian Manufacture, to Dr Beatty, Cobourg, or to the Secretary, Montreal, to whom also, communications on all other business of the Commisssion are to be addressed.

R. CHAMBERLIN, Com'r, Secretary.

Montreal, December 12, 1861.

THE INTERNATIONAL EXHIBITION OF 1862.

THE UNITED AGRICULTURAL SOCIETIES OF WENTWORTH and HAMILTON will hold an Exhibition of Wheat at Crann's Hotel in the City of Hamilton, on Saturday the 18th day of January, 1862, with a view of obtaining the best samples to forward to the International Exhibition, London,

Best two bushels			Soule's Winter Wheat		$6
"	"	"	Red Chaff	"	6
"	"	"	Blue Stem	"	6
"	"	"	Golden Drop, Spring		6
"	"	"	Fife	"	6

The Wheat obtaining the prizes to become the property of the Society. Members of either of the Societies may compete.

The wheat to be the property of the exhibiter, and grown in the County in 1861.

Entries will be received by the Secretary until 10 o'clock, a. m., of the day of Show.

WM. A. COOLEY,
Sec., U. S. W. & H.

Ancaster, Nov. 25th, 1861.

FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several *pure Durham bull calves* to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the *well known DUCHESS tribe*, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—Frst come, first served.

Waterdown, Nov. 14, 1861. 4–t.

VETERINARY SURGEON.

ANDREW SMITH, LICENTIATE of the Edinburgh Veterinary College, and, by appointment, Veterinary Surgeon to the Board of Agriculture of Upper Canada, respectfully announces, that he has commenced his profession in Toronto, and for the present, may be consulted either personally or by letter, on diseases of Horses, Cattle, &c., at the office of the Board of Agriculture, corner of King and Simcoe Streets; or at Mr. Bond's Livery Stables, Shepherd Street.

Toronto, Octoner 3, 1861.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture is at the corner of Simcoe and King streets, Toronto, adjoining the GovernmentHouse. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Secretary.

Toronto, 1861.

FOR SALE.

A FEW PURE-BRED SOUTH-DOWN RAMS and Ewe Lambs, from

IMPORTED STOCK,

Selected from the Best Flock-dealers in Dorset, Wilts, and Hants.

The Subscriber will Warrant these Lambs to produce as much Wool and Mutton, and of equal Quality, as those of Jonas Webb, or any other Flock of the same kind and number in England.

JOHN SPENCER,
Brooklin, Post Office,
Oct. 12th, 1861. Ontario County C. W.

AYRSHIRE BULL FOR SALE.

MR. Denison, of Dover Court, offers for Sale a thorough bred Ayrshire Bull, bred by the celebrated Ayrshire breeder, John Dodd, Esq., of Montreal. The bull is 3 years old, and can be delivered at or after the Show at London, in September.

Toronto, Aug., 1861.

THE

JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES,

FOR UPPER CANADA,

Is Published on the first of every Month,

AT $1 per annum for single copies, or to clubs of ten or more at 75 cents. per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

FOR SALE.

A LOT of thorough bred ESSEX PIGS,—bred from recently imported 1st prize animals, and who have this season taken premiums at both Township, County, and Provincial Exhibition.

JAMES COWAN.

Clochmhor, Galt P. O., Oct. 19, 1861.

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FOR SALE.

A LOT of thorough bred improved Berkshire Pigs of various ages.

R. L. DENISON,
Dover Court.

Toronto, Aug, 1861.

The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

IS published in Toronto on the 1st and 16th of each month.

Subscription—Half a dollar per annum for Single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

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